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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

GONG.IO, INC., Plaintiff, *v.* HYPERDOC INC. d/b/a RECALL.AI, Defendant.	Case No. 3:25-cv-1026 **COMPLAINT** **Demand for Jury Trial**

Plaintiff Gong.io, Inc. ("Plaintiff" or "Gong") brings this complaint to address a knowing and willful campaign of patent infringement by Defendant Hyperdoc Inc., which does business as Recall.ai ("Defendant" or "Recall.ai"). As alleged below, Recall.ai markets and sells functionality to allow bots to join online video conferences and record them – functionality that infringes Gong's own patented inventions in this area. Moreover, Recall.ai instructs its users on exactly how to use this functionality, encouraging them to infringe. And when Gong pointed out Recall.ai's infringement, Recall.ai did not even make an attempt to articulate a theory that it did not infringe, effectively conceding that it does what Gong's patent claims. Gong brings this lawsuit to put a stop to Recall.ai's ongoing infringement of its intellectual property rights.

INTRODUCTION

1. Gong.io is a leader in leveraging proprietary artificial intelligence to enable businesses to capture, analyze, and act on customer interactions through a single, integrated platform. Among its numerous innovations, Gong developed and deployed call recording software that allows businesses to record and transcribe their online meetings. These capabilities apply across a variety of web conferencing platforms, ensuring seamless functionality regardless of the tools used by its customers.

2. Gong's web conference recording solutions include multiple methods for capturing meetings, such as a Gong bot that joins web conferences as a participant to record and document the sessions. Gong's flexible recording tools empower organizations to take full advantage of videoconferencing – both internally and with their clients – secure in the knowledge that information will not fall through the cracks because of the ephemerality of the medium.

3. Gong's groundbreaking contributions to the field of online call recording are protected by U.S. Patent No. 9,699,409 (the "'409 patent"), entitled Recording Web Conferences. The '409 patent, issued to Gong's co-founders—its CEO and Chief Product Officer—confirms the novelty of Gong's innovations in the web conference recording space. The '409 patent claims priority to an application filed over eight years ago, long before web conferencing became the ubiquitous business tool it is today.

4. Unfortunately, not all latecomers have been willing to respect Gong's intellectual property rights in this area. Recall.ai markets and sells technology whose use to record online web conferences infringes one or more claims of the '409 patent. And Recall.ai tells its customers exactly how to infringe the '409 patent, and continues to do so even after Gong explained in exhaustive (and to date, undisputed) detail that Recall.ai's technology is infringing.

THE PARTIES

5. Plaintiff Gong.io, Inc., is a corporation organized under the laws of Delaware, with its principal place of business located at 201 Spear St. 13th Floor, San Francisco, CA 94105. Gong

is a leading innovator in artificial intelligence solutions for analyzing and optimizing business communications.

6. Defendant Hyperdoc Inc. is a corporation organized under the laws of Delaware, with its principal place of business located at 2261 Market Street #4339, San Francisco, CA 94114. Recall.ai develops and markets technology products and services that directly compete with Gong's patented offerings.

JURISDICTION AND VENUE

7. This action arises under the patent laws of the United States, Title 35 of the United States Code, including 35 U.S.C. § 271.

8. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States.

9. This Court has personal jurisdiction over Recall.ai because Recall.ai is headquartered in California, conducts business in California, has employees and officers in California, and sells and offers for sale products and services (including the infringing technology) in California (including in this District).

10. Venue is proper in this District under the provisions of 28 U.S.C. § 1400(b) because Recall.ai has one or more regular and established places of business in this District (such as its headquarters at 2261 Market Street #4339, San Francisco, CA 94114) and has committed acts of infringement in this District.

THE PATENT-IN-SUIT

U.S. Patent No. 9,699,409

11. U.S. Patent No. 9,699,409, attached as Exhibit A, is entitled "Recording Web Conferences" and was issued by the United States Patent and Trademark Office on July 4, 2017.

12. The '409 patent names as inventors Amit Bendov and Eilon Reshef, the co-founders of Gong.io, including its CEO and Chief Product Officer, respectively. Gong.io is the owner of all right, title, and interest in and to the '409 patent.

13. The ’409 patent claims priority to U.S. Patent Application No. 13/651,334, which was filed on October 15, 2012.

14. The ’409 patent is directed to systems and methods for recording web conferences, specifically for capturing audio, video, and screen-sharing content during virtual meetings. (See Ex. A, ’409 patent, col. 1, ll. 28-34.)

15. The ’409 patent emerged out of Gong’s innovations in the field of video conference recording. Many video conferencing solutions either do not have a built-in solution for recording meetings, or, if they do offer such a feature, it is limited and not extensible.

16. For example, the built-in solutions for recording online videoconferences may not produce video files that are in standardized file formats or that are portable to other pieces of software.

17. The ’409 patent discloses embodiments where a recording system integrates with various web conferencing platforms to capture, synchronize, and store meeting data. For example, the patent describes using a virtual entity that functions like a human participant – in other words, a bot – to join the conference and automatically record the proceedings. (See Ex. A, ’409 patent, Figs. 1-2, col. 1, ll. 44-56; col. 6, ll. 47-50; col. 8, ll. 25-28.)

18. By recording meetings using a virtual participant that is programmed to interact with the video conferencing system the same way a human would, the recording system can capture whatever a human participant sees, and make use of that information in whatever way the maker of the recording system desires. In other words, one is not limited by the functionality that is built in to the video conferencing system (e.g., Zoom, Teams, Google Meet, etc.) itself.

19. The claims of the ’409 patent recite the use of such a “virtual participant” to record online video meetings. For example, claim 1 of the ’409 patent reads as follows:

> 1. A method of conference recording, comprising the steps of:
>
> identifying a plurality of virtual conferences being operated by a conferencing system connected to a communications network, the virtual conferences having human participants;

> executing a plurality of virtual participant processes in a processor;
>
> registering the virtual participant processes with the conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface; and
>
> recording information streams of the human participants using the virtual participant processes.

RECALL.AI'S INFRINGING TECHNOLOGY

20. Recall.ai markets itself as offering a "unified API for meeting bots."

21. An API, or Application Programming Interface, allows developers to programmatically interact with a service.

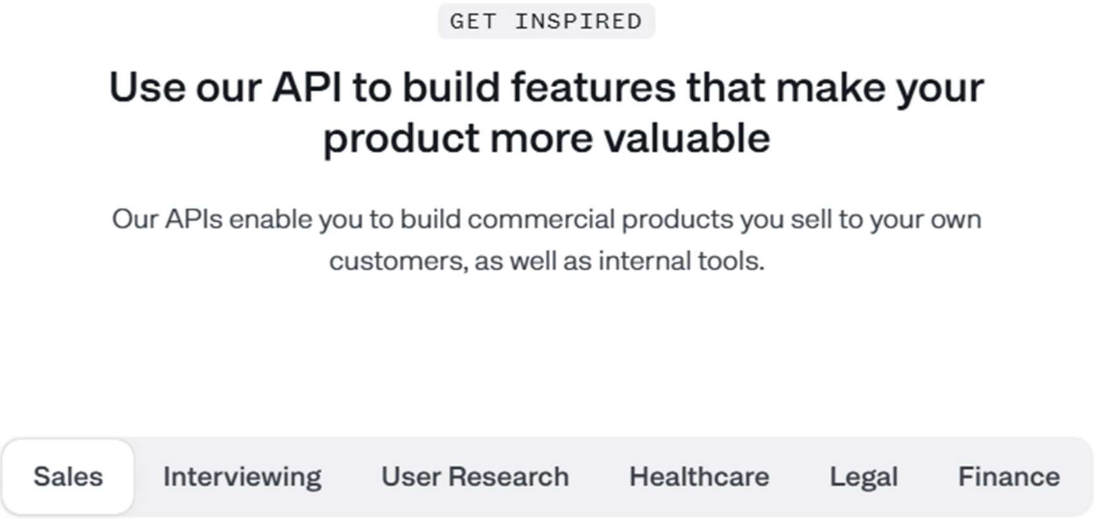
22. Just as a human might interact with a piece of software using its *graphical user* interface (e.g., by opening the File menu and selecting Save) Recall.ai's *application programming* interface allows a computer program to interact with and invoke Recall.ai's software and services (e.g., by sending a request containing specific pieces of information over the World Wide Web to a specific Recall.ai URL in order to tell a Recall.ai bot to join a specific online meeting).

23. Just as the manual for a computer program provides users with details on its graphical user interface (e.g., what menus and submenus exist, and which options they contain), Recall.ai provides documentation to its customers to instruct them on how to use its API (e.g., which URLs they can send and receive messages from, and what information to include in requests to those URLs in order to cause Recall.ai's bots to perform certain functions or provide desired information).

24. Recall.ai offers bots that can join and record online video conferences, like Zoom meetings.

25. Using Recall.ai's API, developers can create bots, issue them commands (e.g., joining a particular meeting at a particular point in time), and obtain information from them (e.g., a recording of the meeting in the form of a video file).

26. Recall.ai's website touts its technology as allowing developers to make more valuable products in the fields of sales, interviewing, user research, healthcare, legal, and finance:



GET INSPIRED

Use our API to build features that make your product more valuable

Our APIs enable you to build commercial products you sell to your own customers, as well as internal tools.

27. Recall.ai's infringement of the '409 patent is knowing and willful. Recall.ai was aware of the '409 patent and its infringement no later than September 20, 2024, when Gong sent Recall.ai a letter identifying the '409 patent and explaining in detail how Recall.ai infringed it.

28. In response, Recall.ai did not substantively contest that it infringed the '409 patent.

29. Although Recall.ai contended that the '409 patent was invalid in light of the prior art, virtually all the prior art references it identified were considered by the United States Patent and Trademark Office in allowing the claims of the '409 patent to issue. The sole exception was one reference that was relied upon only for the minor point that there are multiple types of video conferences that a user might participate in.

30. Despite being on notice of its infringement, and despite its failure to articulate any sort of non-infringement theory and a meritorious invalidity theory, Recall.ai continues to infringe the '409 patent.

31. Recall.ai's continued infringement of the '409 patent with knowledge of the '409 patent constitutes willful infringement.

CAUSES OF ACTION

COUNT I

Infringement of U.S. Patent No. 9,699,409

32. Gong realleges and incorporates by reference all allegations set forth in the preceding paragraphs, as if fully set forth herein.

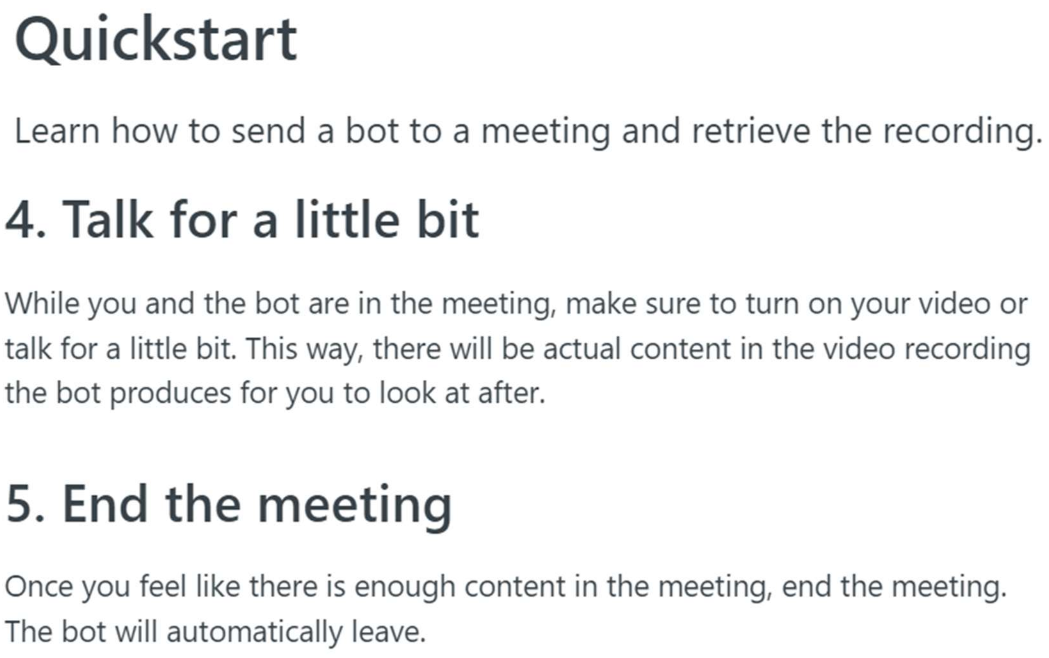
33. Recall.ai has directly infringed and continues to infringe one or more claims of the ’409 patent, literally or under the doctrine of equivalents, in violation of 35 U.S.C. § 271(a), at least because Recall.ai makes, sells, offers to sell, uses, designs, tests, and maintains within the United States products that infringe claim 1 of the ’409 patent, including Recall.ai’s API, bots, and related software and hardware (“Accused Product”).

34. Recall.ai has contributed to the infringement of one or more claims of the ’409 patent by selling, offering to sell, and/or supplying components (e.g., bot software) for use in practicing the patented methods of the ’409 patent, as described below. Those components constitute a material part of the claimed invention, and are not a staple article or commodity of commerce with substantial non-infringing uses, because one or more methods claimed in the ’409 patent must be performed for Recall.ai’s components to fulfil their intended purpose. For example, Recall.ai’s bot’s primary purpose is to be able to record video conferences, and doing so infringes the ’409 patent.

35. Recall.ai has induced others, such as its customers, to infringe one or more of the claims of the ’409 patent in violation of 35 U.S.C. § 271(b), with specific intent to induce infringement and/or willful blindness as to the possibility that its acts induce infringement. Recall.ai’s customers directly infringe at least by following Recall.ai’s instructions, as described in further detail below.

36. Exhibit B to this complaint sets forth a non-limiting example of Recall.ai’s infringement of claim 1 of the ’409 patent. A more concise explanation of Recall.ai’s infringement of claim 1 of the ’409 patent is set forth below.

37. To the extent the preamble of claim 1 of the ’409 patent (“A method of conference recording, comprising the steps of …”) is limiting, Recall.ai instructs its customers to perform that method. For example, Recall.ai instructs users on how “to send a bot to a meeting and retrieve the recording”:



Quickstart

Learn how to send a bot to a meeting and retrieve the recording.

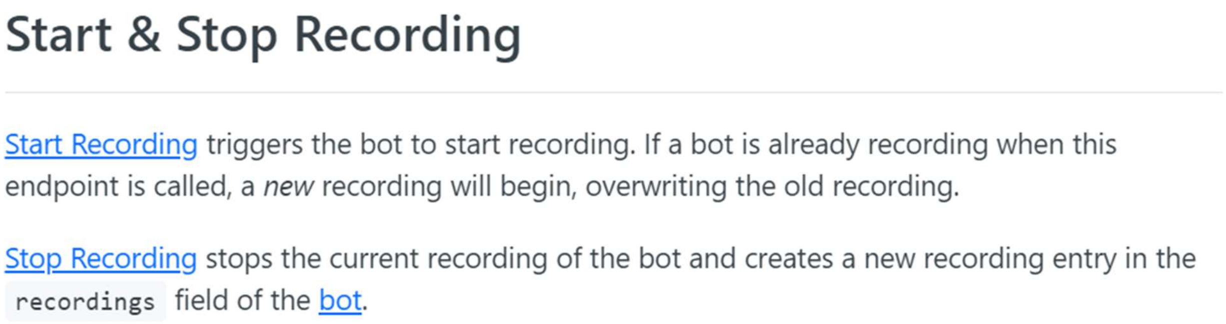
4. Talk for a little bit

While you and the bot are in the meeting, make sure to turn on your video or talk for a little bit. This way, there will be actual content in the video recording the bot produces for you to look at after.

5. End the meeting

Once you feel like there is enough content in the meeting, end the meeting. The bot will automatically leave.

https://docs.recall.ai/docs/quickstart



Start & Stop Recording

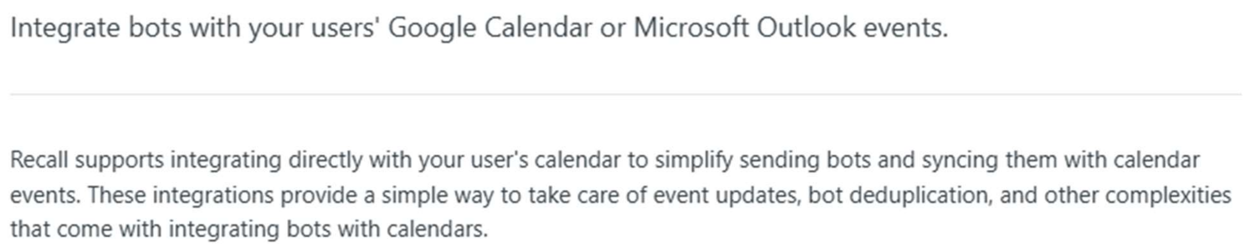
Start Recording triggers the bot to start recording. If a bot is already recording when this endpoint is called, a *new* recording will begin, overwriting the old recording.

Stop Recording stops the current recording of the bot and creates a new recording entry in the `recordings` field of the bot.

https://docs.recall.ai/docs/recording-control

38. Recall.ai instructs its customers to perform the step of “identifying a plurality of virtual conferences being operated by a conferencing system connected to a communications network, the virtual conferences having human participants.” For example, Recall.ai instructs its customers to

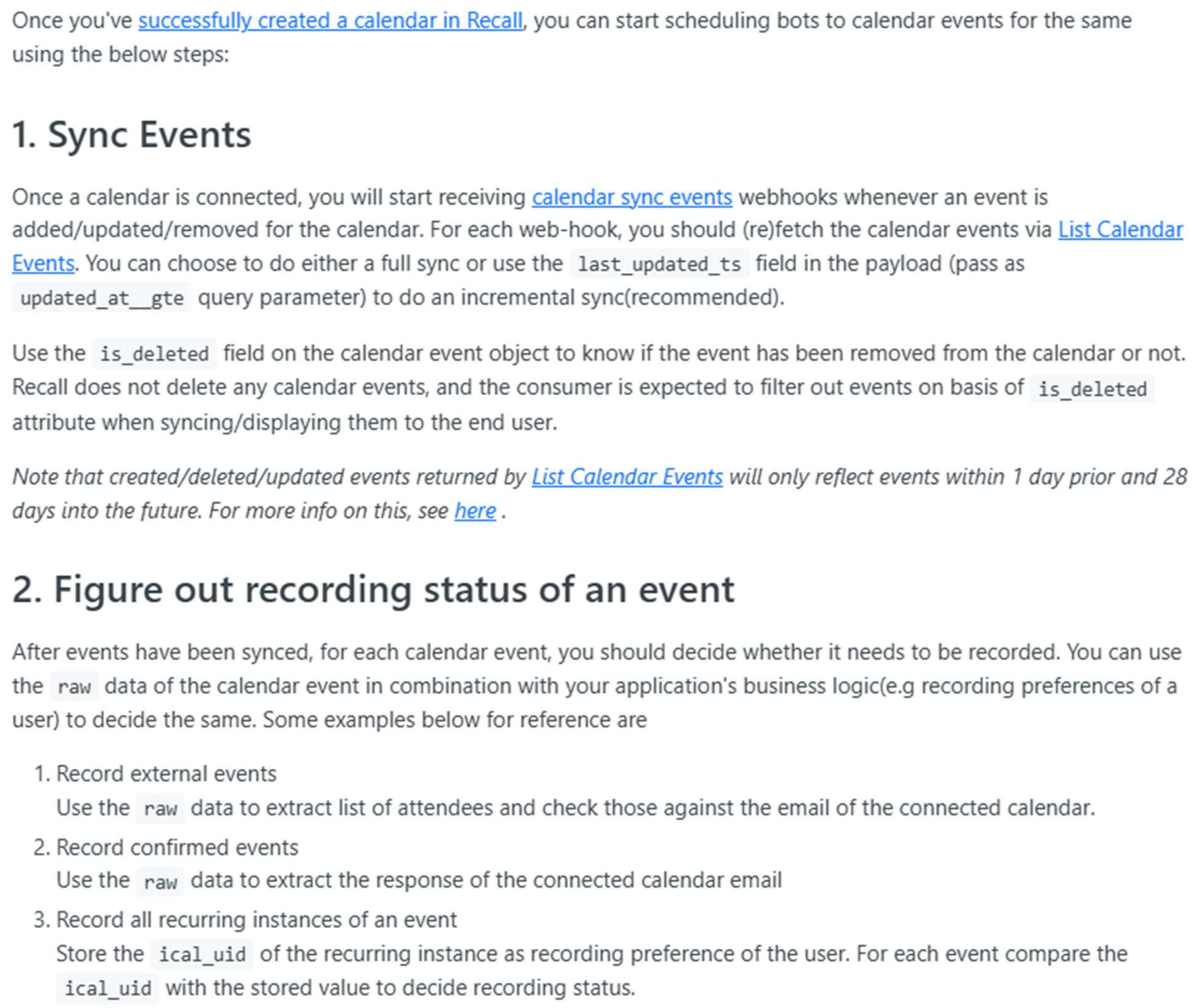
synchronize a bot with their calendars so that the bot receives notifications when events, such as online meetings, are added to the calendar:



Integrate bots with your users' Google Calendar or Microsoft Outlook events.

Recall supports integrating directly with your user's calendar to simplify sending bots and syncing them with calendar events. These integrations provide a simple way to take care of event updates, bot deduplication, and other complexities that come with integrating bots with calendars.

https://docs.recall.ai/docs/calendar-integration



Once you've successfully created a calendar in Recall, you can start scheduling bots to calendar events for the same using the below steps:

1. Sync Events

Once a calendar is connected, you will start receiving calendar sync events webhooks whenever an event is added/updated/removed for the calendar. For each web-hook, you should (re)fetch the calendar events via List Calendar Events. You can choose to do either a full sync or use the `last_updated_ts` field in the payload (pass as `updated_at__gte` query parameter) to do an incremental sync(recommended).

Use the `is_deleted` field on the calendar event object to know if the event has been removed from the calendar or not. Recall does not delete any calendar events, and the consumer is expected to filter out events on basis of `is_deleted` attribute when syncing/displaying them to the end user.

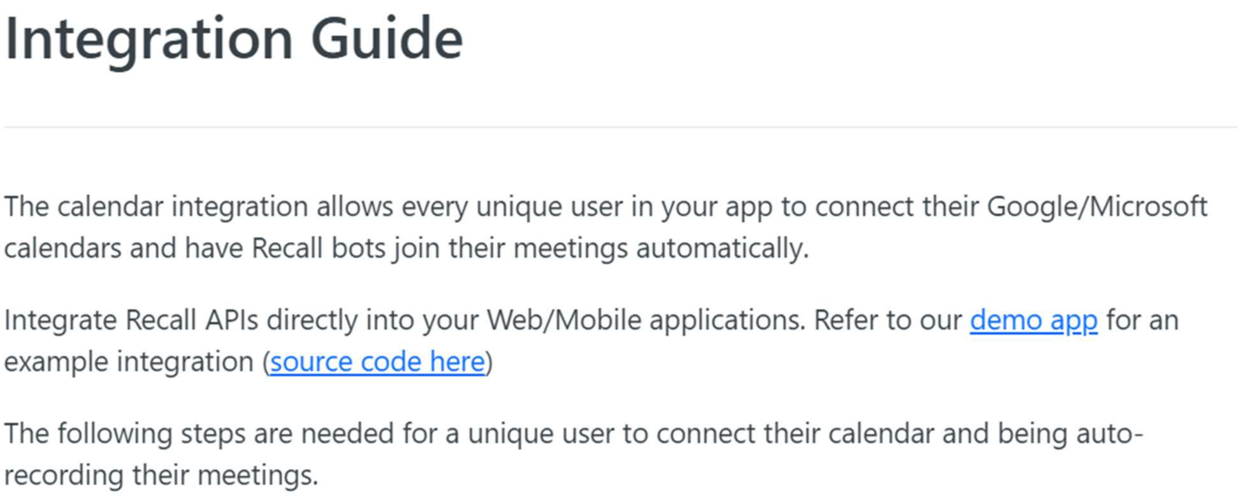
Note that created/deleted/updated events returned by List Calendar Events will only reflect events within 1 day prior and 28 days into the future. For more info on this, see here .

2. Figure out recording status of an event

After events have been synced, for each calendar event, you should decide whether it needs to be recorded. You can use the `raw` data of the calendar event in combination with your application's business logic(e.g recording preferences of a user) to decide the same. Some examples below for reference are

1. Record external events
   Use the `raw` data to extract list of attendees and check those against the email of the connected calendar.
2. Record confirmed events
   Use the `raw` data to extract the response of the connected calendar email
3. Record all recurring instances of an event
   Store the `ical_uid` of the recurring instance as recording preference of the user. For each event compare the `ical_uid` with the stored value to decide recording status.

https://docs.recall.ai/docs/scheduling-guide.



Integration Guide

The calendar integration allows every unique user in your app to connect their Google/Microsoft calendars and have Recall bots join their meetings automatically.

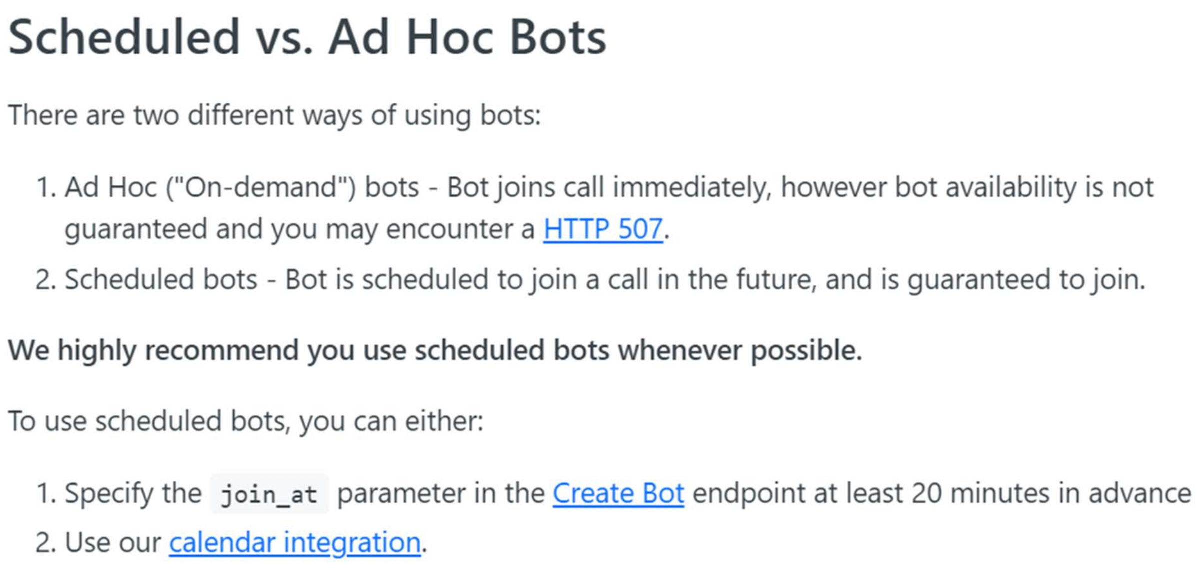
Integrate Recall APIs directly into your Web/Mobile applications. Refer to our demo app for an example integration (source code here)

The following steps are needed for a unique user to connect their calendar and being auto-recording their meetings.

https://docs.recall.ai/docs/calendar-v1-integration-guide

39. As shown in the excerpts above, Recall.ai expects that the calendar will contain a plurality of video conferences that can be recorded. The video conferences on the calendar that is synchronized with the bot are "operated by a conferencing system connected to a communications network" (e.g., Zoom or Microsoft Teams). Finally, the video conferences each have human participants.

40. Recall.ai instructs its customers to perform the step of "executing a plurality of virtual participant processes in a processor." For example, Recall.ai supports multiple bots, each of which is a virtual participant process in a processor:



Scheduled vs. Ad Hoc Bots

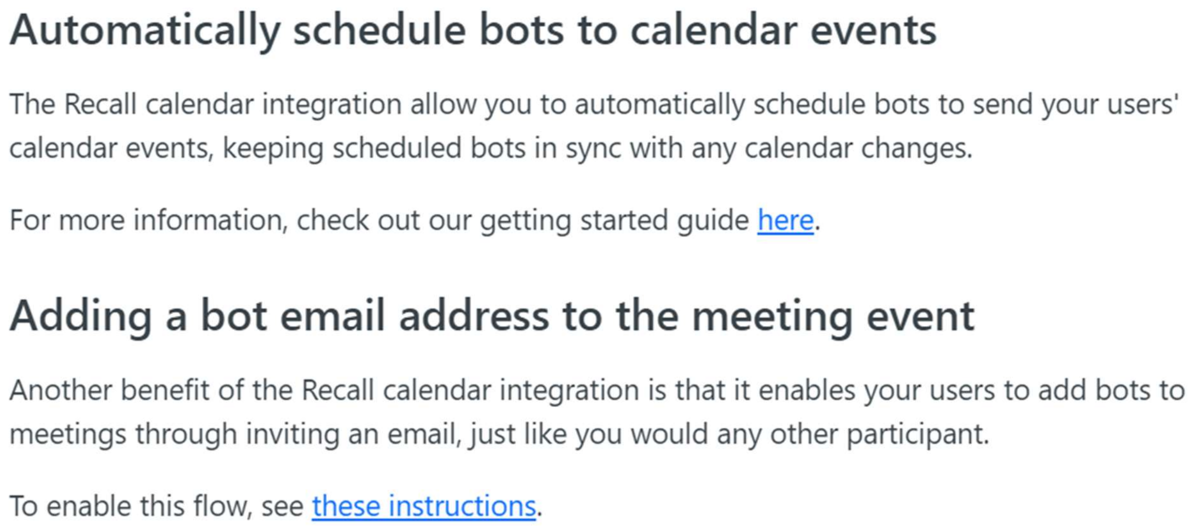
There are two different ways of using bots:

1. Ad Hoc ("On-demand") bots - Bot joins call immediately, however bot availability is not guaranteed and you may encounter a HTTP 507.
2. Scheduled bots - Bot is scheduled to join a call in the future, and is guaranteed to join.

We highly recommend you use scheduled bots whenever possible.

To use scheduled bots, you can either:

1. Specify the `join_at` parameter in the Create Bot endpoint at least 20 minutes in advance
2. Use our calendar integration.



Automatically schedule bots to calendar events

The Recall calendar integration allow you to automatically schedule bots to send your users' calendar events, keeping scheduled bots in sync with any calendar changes.

For more information, check out our getting started guide here.

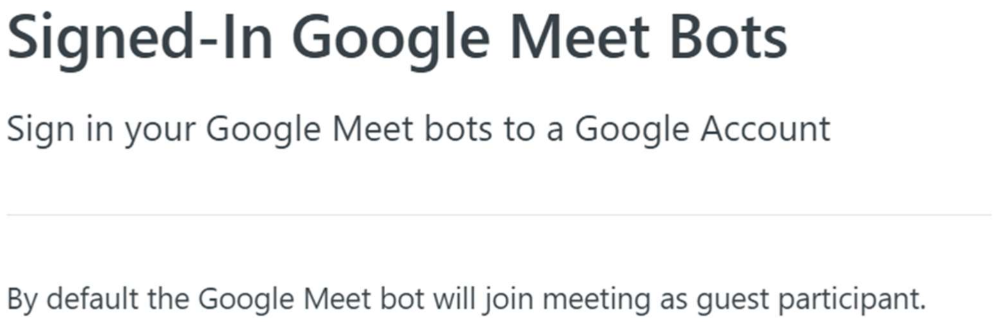
Adding a bot email address to the meeting event

Another benefit of the Recall calendar integration is that it enables your users to add bots to meetings through inviting an email, just like you would any other participant.

To enable this flow, see these instructions.

https://docs.recall.ai/docs/bot-fundamentals

41. Recall.ai instructs its customers to perform the step of "registering the virtual participant processes with the conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface." For example, Recall.ai's bots join video conferences. Because the video conferencing software is designed for humans to access and use by means of a graphical user interface, Recall.ai's bots must emulate human interactions with a graphical user interface in order to join the video conference.

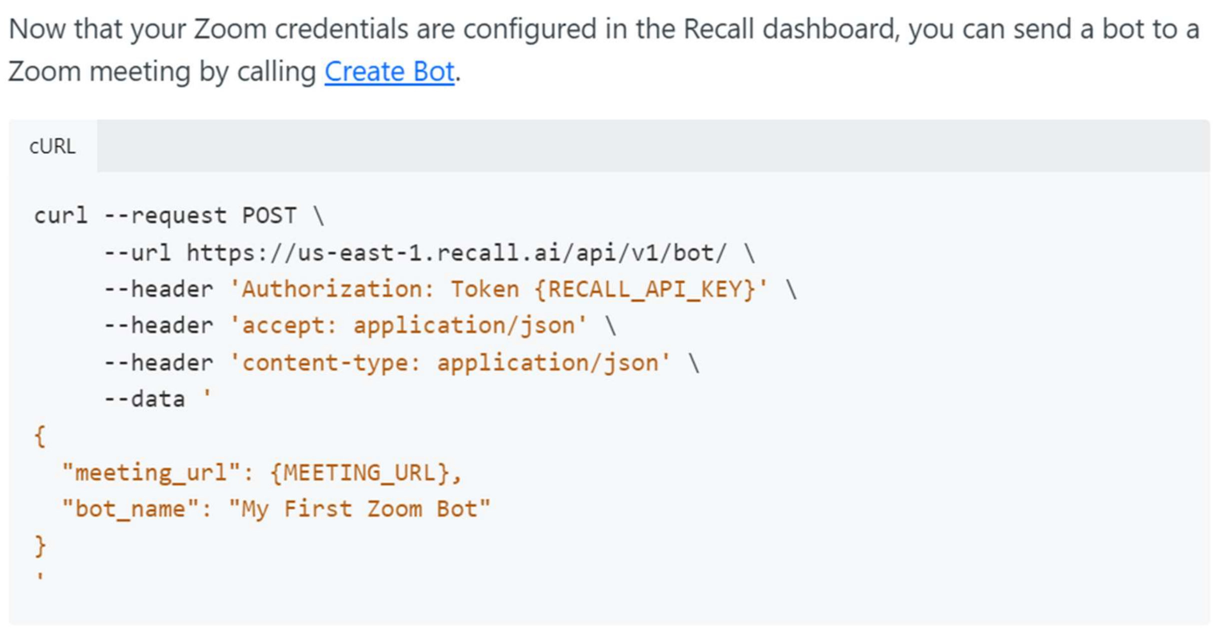


Signed-In Google Meet Bots

Sign in your Google Meet bots to a Google Account

By default the Google Meet bot will join meeting as guest participant.

https://docs.recall.ai/docs/google-meet-login-getting-started



Now that your Zoom credentials are configured in the Recall dashboard, you can send a bot to a Zoom meeting by calling Create Bot.

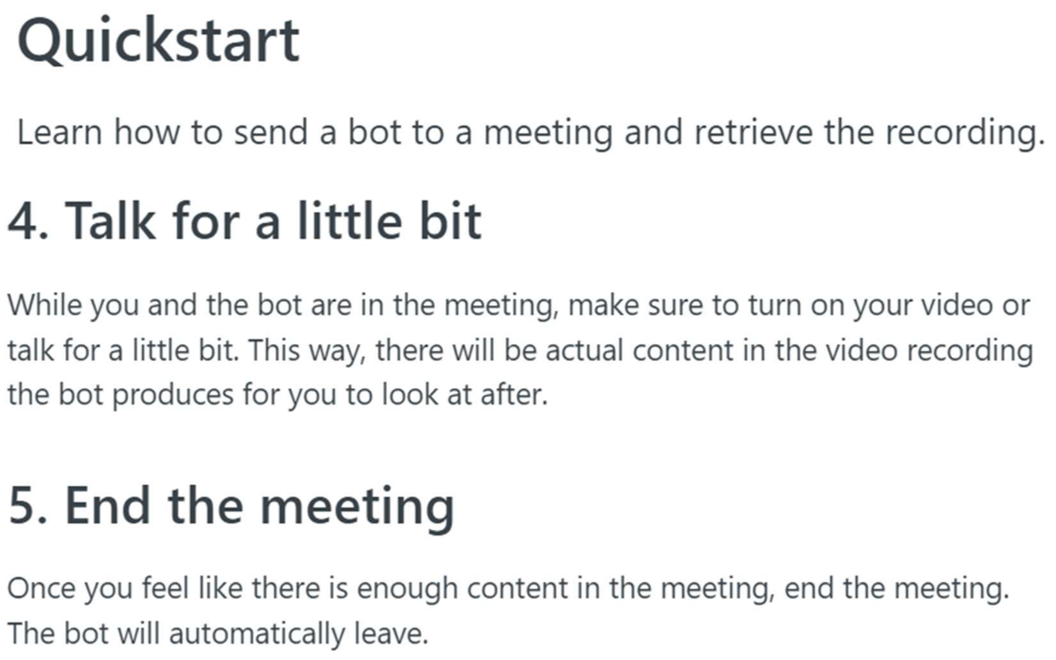
cURL

```
curl --request POST \
     --url https://us-east-1.recall.ai/api/v1/bot/ \
     --header 'Authorization: Token {RECALL_API_KEY}' \
     --header 'accept: application/json' \
     --header 'content-type: application/json' \
     --data '
{
  "meeting_url": {MEETING_URL},
  "bot_name": "My First Zoom Bot"
}
'
```

Wait a few moments and the bot will join the call.

https://docs.recall.ai/docs/set-up-zoom

42. Recall.ai instructs its customers to perform the step of "recording information streams of the human participants using the virtual participant processes." For example, Recall.ai's bots record video conferences:



Quickstart

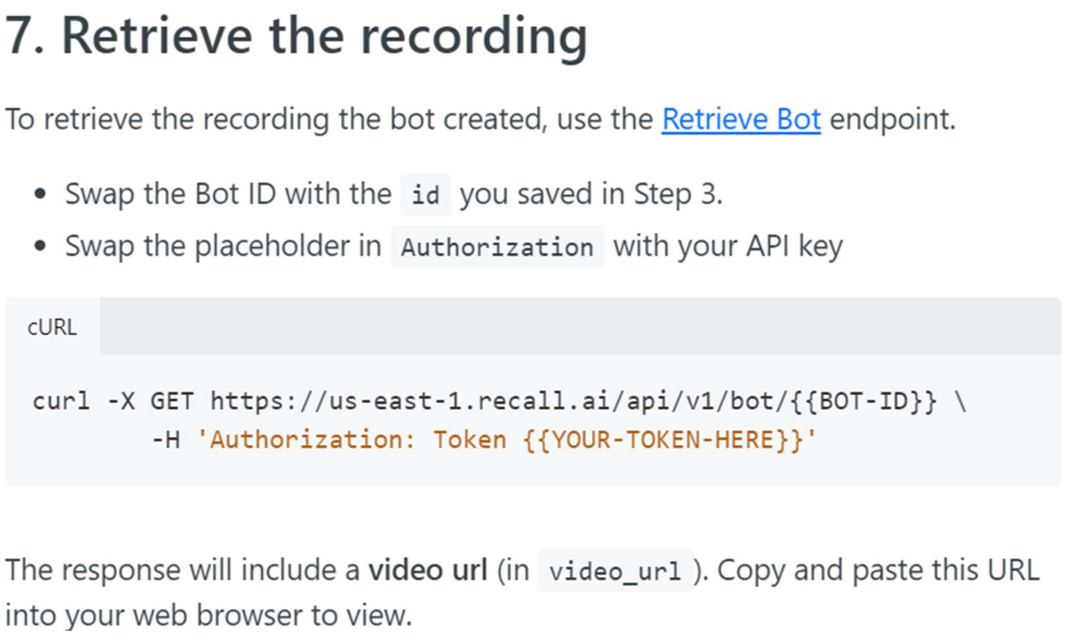
Learn how to send a bot to a meeting and retrieve the recording.

4. Talk for a little bit

While you and the bot are in the meeting, make sure to turn on your video or talk for a little bit. This way, there will be actual content in the video recording the bot produces for you to look at after.

5. End the meeting

Once you feel like there is enough content in the meeting, end the meeting. The bot will automatically leave.



7. Retrieve the recording

To retrieve the recording the bot created, use the Retrieve Bot endpoint.

- Swap the Bot ID with the `id` you saved in Step 3.
- Swap the placeholder in `Authorization` with your API key

cURL

```
curl -X GET https://us-east-1.recall.ai/api/v1/bot/{{BOT-ID}} \
        -H 'Authorization: Token {{YOUR-TOKEN-HERE}}'
```

The response will include a **video url** (in `video_url`). Copy and paste this URL into your web browser to view.

https://docs.recall.ai/docs/quickstart.

43. Recall.ai's infringement has caused and continues to cause damage and irreparable harm to Gong, including loss of market share. Unless and until that infringement is enjoined by this Court, Gong will continue to suffer damage and irreparable harm as a remedy at law alone would be inadequate.

44. Recall.ai's infringement of the '409 patent is exceptional and entitles Gong to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

45. Gong is entitled to injunctive relief and damages in accordance with 35 U.S.C. §§ 271, 281, 283, and 284.

PRAYER FOR RELIEF

46. Gong therefore respectfully requests:

a. That judgment be entered that Recall.ai has infringed at least one or more claims of the '409 patent, literally and/or under the doctrine of equivalents;

b. An injunction enjoining Recall.ai, its officers, agents, servants, employees, and attorneys, and other persons in active concert or participation with Recall.ai, and its parents, subsidiaries, divisions, successors, and assigns, from further infringement of the '409 patent;

c. An award of damages sufficient to compensate Gong for Recall.ai's infringement under 35 U.S.C. § 284;

d. A finding that Recall.ai's infringement was willful;

e. That the case be found exceptional under 35 U.S.C. § 285 and that Gong be awarded its reasonable attorneys' fees;

f. Costs and expenses in this action;

g. An award of prejudgment and post-judgment interest;

h. That this Court, if it declines to enjoin Defendant from infringing the '409 patent, award damages for future infringement in lieu of an injunction; and

i. Such other and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

47. Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Gong respectfully demands a trial by jury on all issues so triable.

Dated: January 31, 2025

Respectfully submitted,

ORRICK, HERRINGTON & SUTCLIFFE LLP

By */s/ Raghav Krishnapriyan*
Raghav Krishnapriyan
Attorney for Plaintiff GONG.IO, INC.

EXHIBIT A

US009699409B1

(12) United States Patent
Reshef et al.

(10) **Patent No.: US 9,699,409 B1**

(45) **Date of Patent: Jul. 4, 2017**

(54) **RECORDING WEB CONFERENCES**

(71) Applicant: **Honeyfy Ltd.**, Herzliya (IL)

(72) Inventors: **Eilon Reshef**, Tel Aviv (IL); **Amit Bendov**, Kadima (IL)

(73) Assignee: **GONG I.O LTD.**, Herzliya (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/275,397**

(22) Filed: **Sep. 25, 2016**

Related U.S. Application Data

(60) Provisional application No. 62/296,107, filed on Feb. 17, 2016.

(51) **Int. Cl.**

H04N 7/15	(2006.01)
H04N 7/14	(2006.01)
G06F 3/0484	(2013.01)
H04L 29/06	(2006.01)

(52) **U.S. Cl.**
CPC ***H04N 7/147*** (2013.01); ***G06F 3/0484*** (2013.01); ***H04N 7/15*** (2013.01); *H04L 65/403* (2013.01)

(58) **Field of Classification Search**
CPC H04N 7/147
See application file for complete search history.

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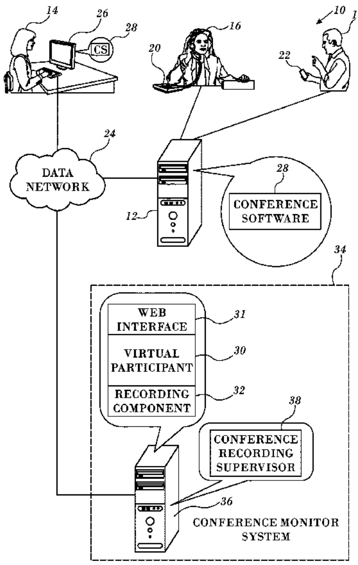
Primary Examiner — Creighton Smith

(74) *Attorney, Agent, or Firm* — D. Kligler IP Services Ltd.

(57) **ABSTRACT**

Conference recording is carried out by identifying a virtual conference operated by a conferencing system connected to a communications network. A virtual participant process executing in a processor is registered with the conferencing system as a co-participant in the virtual conference. Information streams produced by the human participants are recorded and distributed with the virtual participant process.

23 Claims, 6 Drawing Sheets



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* cited by examiner

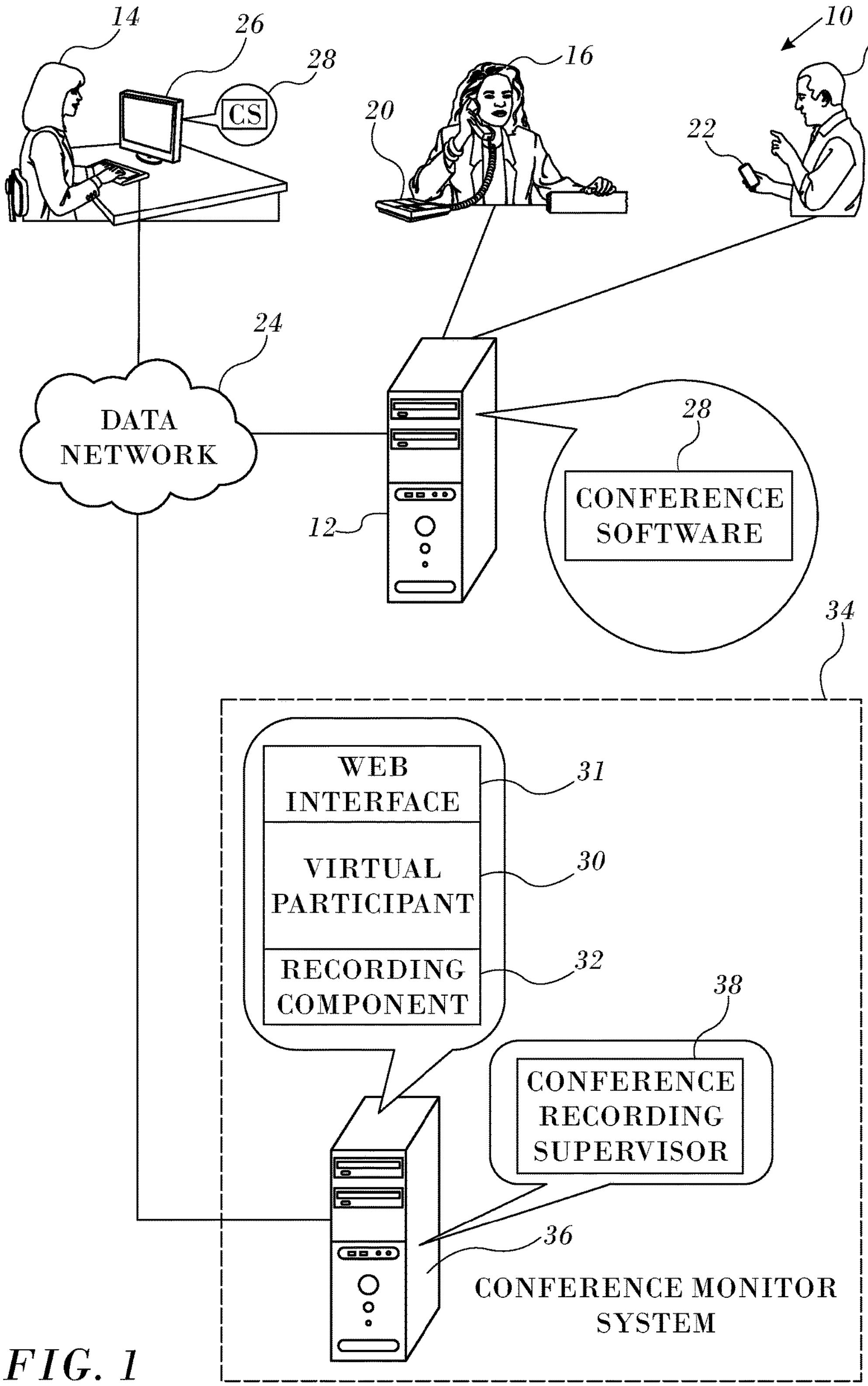

14
26
28
CS
16
20
10
18
22
24
DATA NETWORK
28
CONFERENCE SOFTWARE
12
34
WEB INTERFACE
31
VIRTUAL PARTICIPANT
30
RECORDING COMPONENT
32
38
CONFERENCE RECORDING SUPERVISOR
36
CONFERENCE MONITOR SYSTEM

FIG. 1

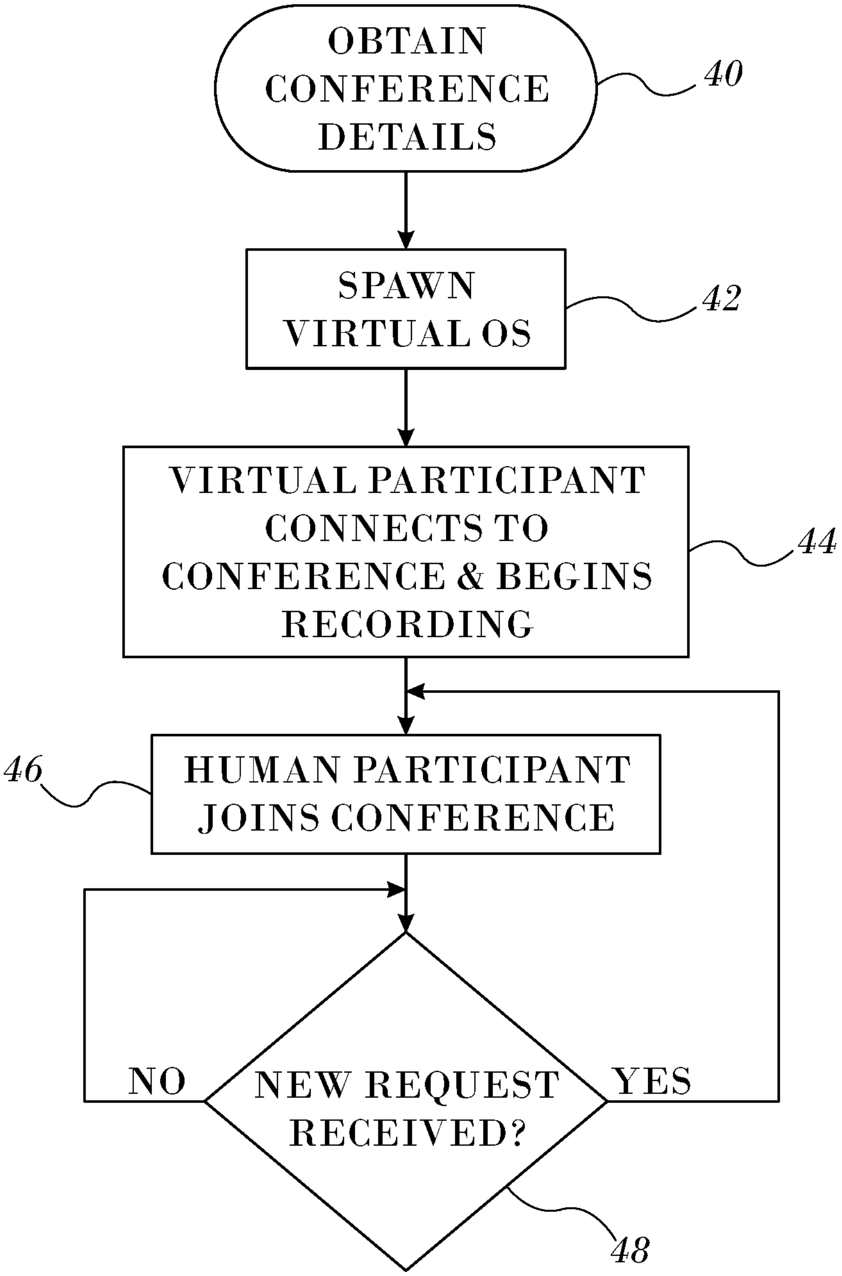
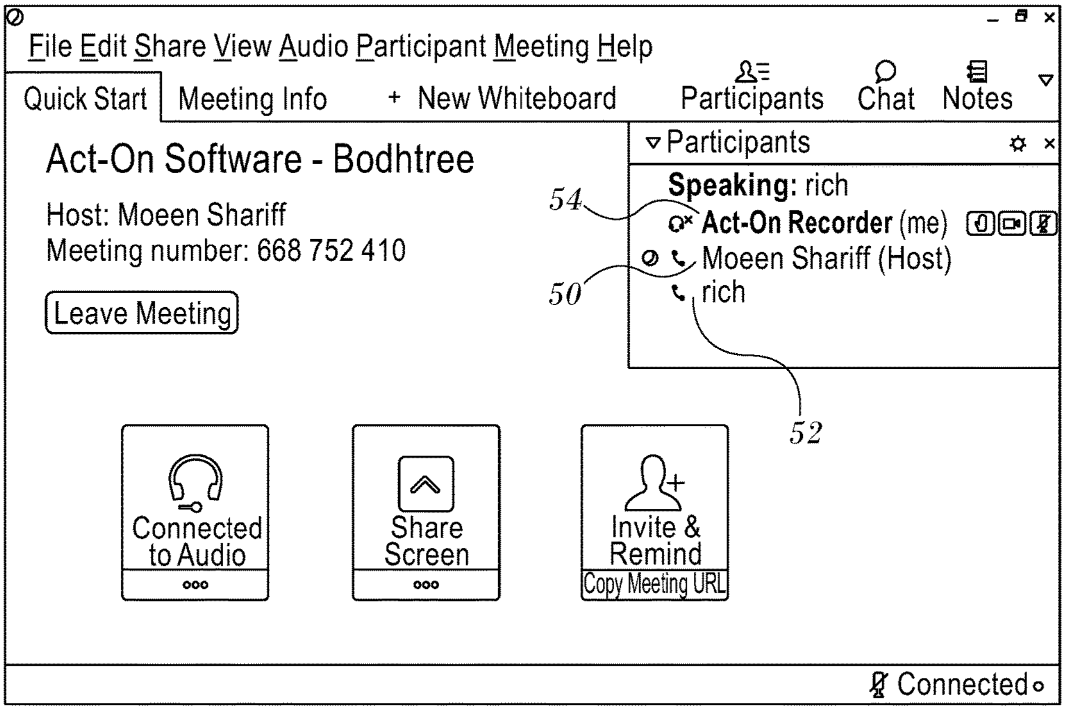

OBTAIN CONFERENCE DETAILS
40
SPAWN VIRTUAL OS
42
VIRTUAL PARTICIPANT CONNECTS TO CONFERENCE & BEGINS RECORDING
44
46
HUMAN PARTICIPANT JOINS CONFERENCE
NO
NEW REQUEST RECEIVED?
YES
48

FIG. 2



Act-On Software - Bodhtree

Host: Moeen Shariff

Meeting number: 668 752 410

FIG. 3

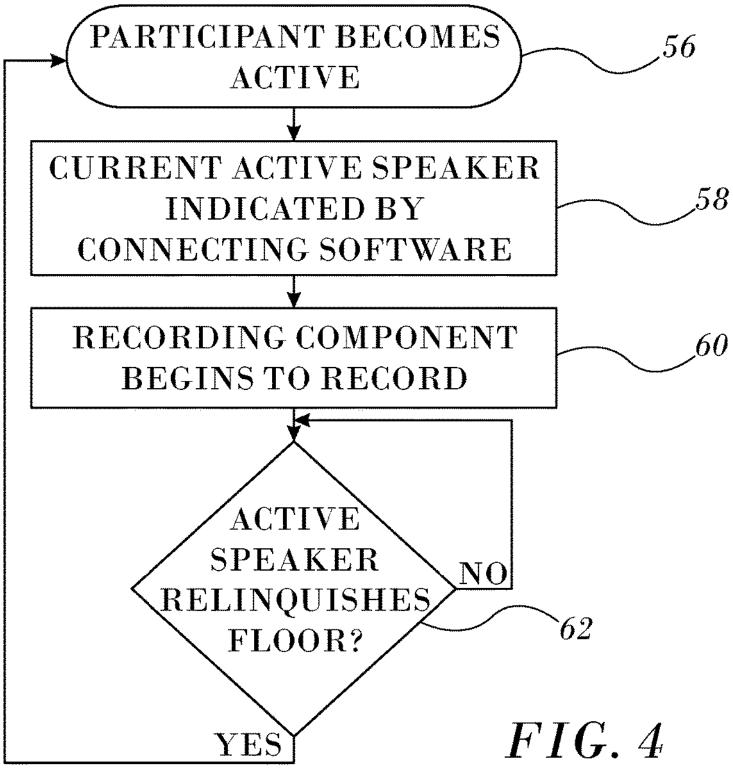
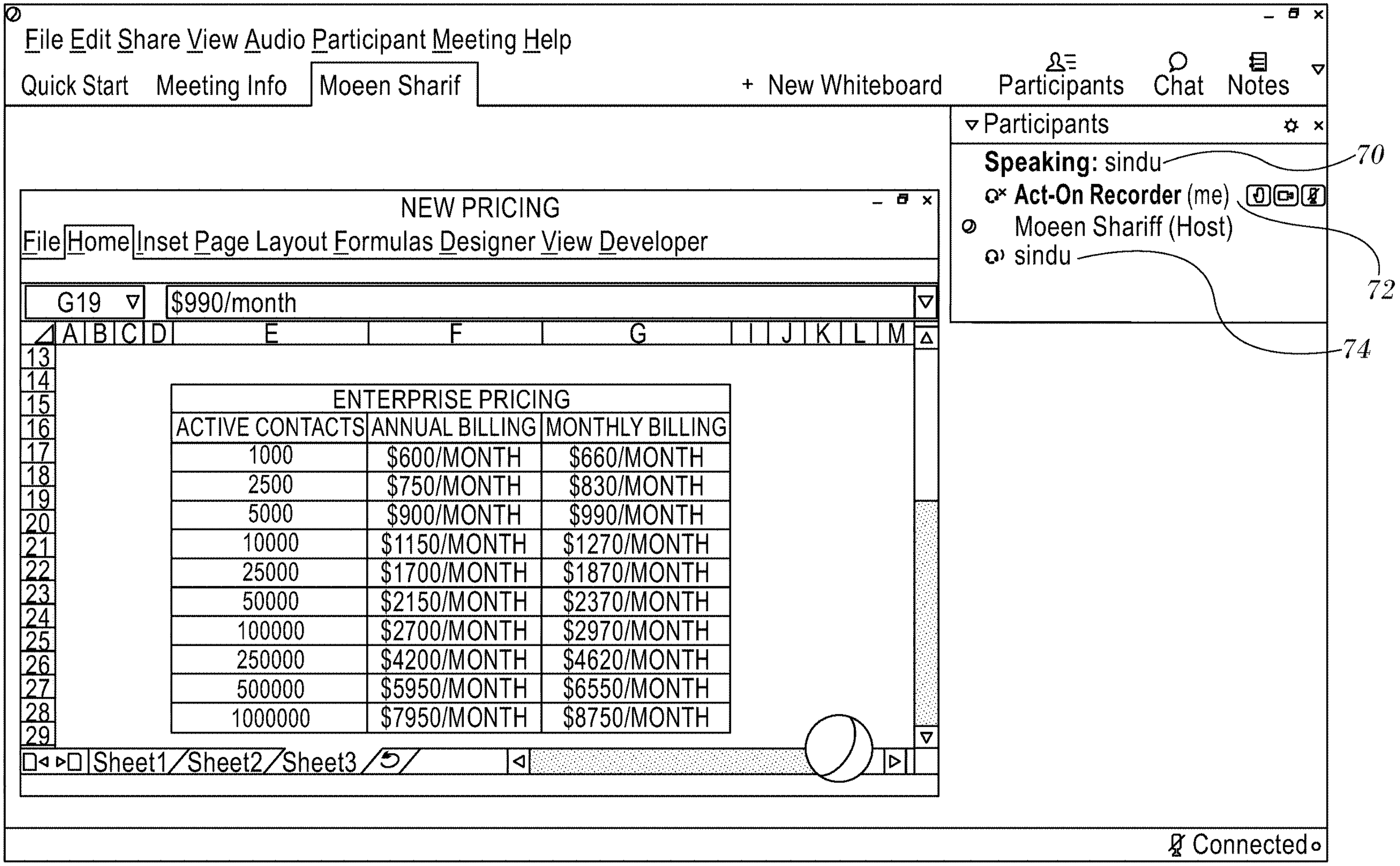

PARTICIPANT BECOMES ACTIVE
56
CURRENT ACTIVE SPEAKER INDICATED BY CONNECTING SOFTWARE
58
RECORDING COMPONENT BEGINS TO RECORD
60
ACTIVE SPEAKER RELINQUISHES FLOOR?
NO
62
YES

FIG. 4



G19 $990/month

ENTERPRISE PRICING		
ACTIVE CONTACTS	ANNUAL BILLING	MONTHLY BILLING
1000	$600/MONTH	$660/MONTH
2500	$750/MONTH	$830/MONTH
5000	$900/MONTH	$990/MONTH
10000	$1150/MONTH	$1270/MONTH
25000	$1700/MONTH	$1870/MONTH
50000	$2150/MONTH	$2370/MONTH
100000	$2700/MONTH	$2970/MONTH
250000	$4200/MONTH	$4620/MONTH
500000	$5950/MONTH	$6550/MONTH
1000000	$7950/MONTH	$8750/MONTH

Speaking: sindu
Act-On Recorder (me)
Moeen Shariff (Host)
sindu

FIG. 5

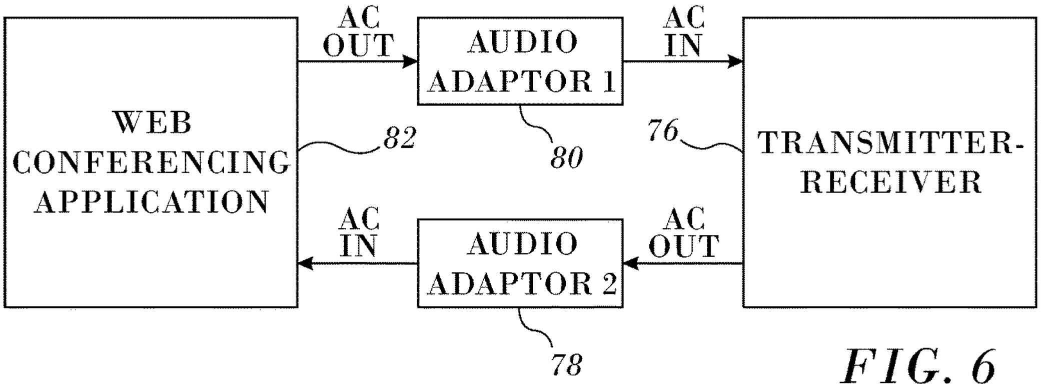
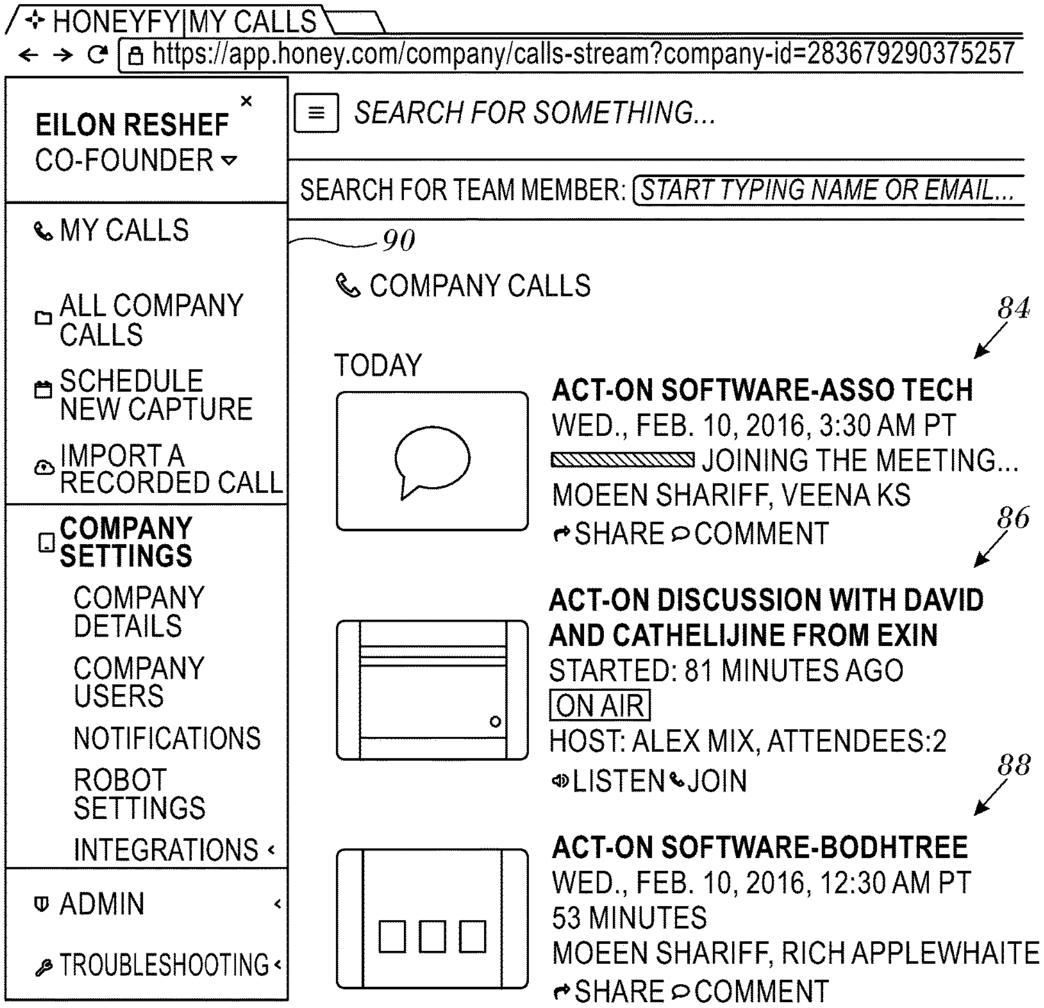


FIG. 6



✣ HONEYFY|MY CALLS

← → ⟳ https://app.honey.com/company/calls-stream?company-id=283679290375257

EILON RESHEF ×
CO-FOUNDER ▾

≡ SEARCH FOR SOMETHING...

SEARCH FOR TEAM MEMBER: START TYPING NAME OR EMAIL...

☎ MY CALLS

ALL COMPANY CALLS

SCHEDULE NEW CAPTURE

IMPORT A RECORDED CALL

COMPANY SETTINGS

COMPANY DETAILS

COMPANY USERS

NOTIFICATIONS

ROBOT SETTINGS

INTEGRATIONS ‹

ADMIN ‹

TROUBLESHOOTING ‹

☎ COMPANY CALLS

TODAY

ACT-ON SOFTWARE-ASSO TECH
WED., FEB. 10, 2016, 3:30 AM PT
▨▨▨▨▨ JOINING THE MEETING...
MOEEN SHARIFF, VEENA KS
SHARE COMMENT

ACT-ON DISCUSSION WITH DAVID AND CATHELIJINE FROM EXIN
STARTED: 81 MINUTES AGO
ON AIR
HOST: ALEX MIX, ATTENDEES:2
LISTEN JOIN

ACT-ON SOFTWARE-BODHTREE
WED., FEB. 10, 2016, 12:30 AM PT
53 MINUTES
MOEEN SHARIFF, RICH APPLEWHAITE
SHARE COMMENT

FIG. 7

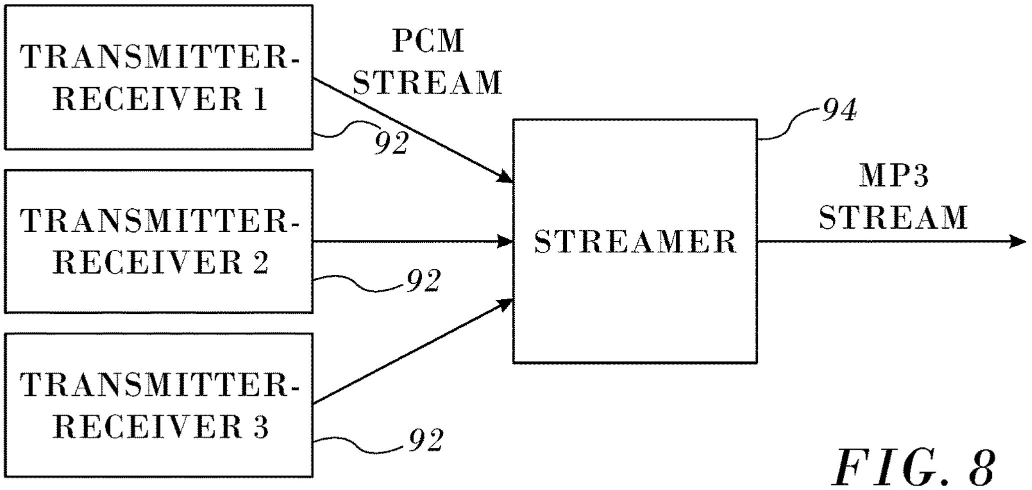


FIG. 8

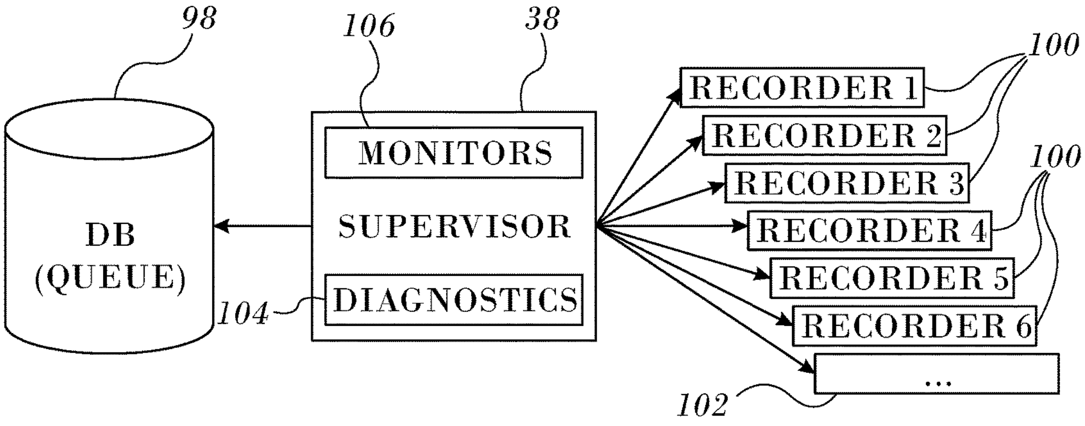


FIG. 9

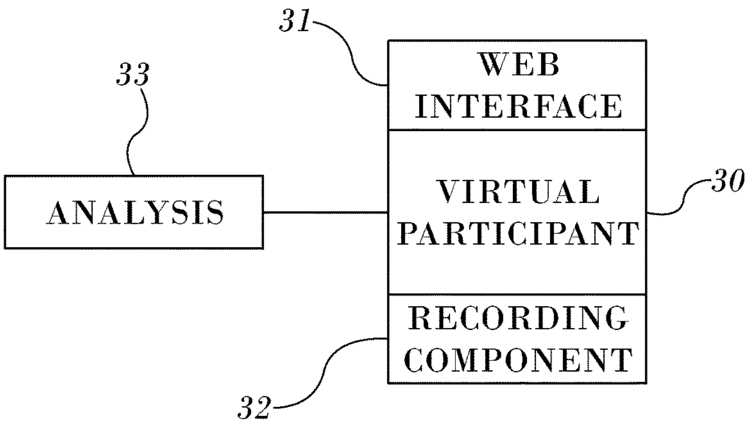


FIG. 10

RECORDING WEB CONFERENCES

CROSS-REFERENCE TO RELATED APPLICATIONS

This Application claims the benefit of U.S. Provisional Application No. 62/296,107, filed Feb. 17, 2016, which is herein incorporated by reference.

COPYRIGHT NOTICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to arrangements for multi-party conferencing. More particularly, this invention relates to documentation of virtual conferences over data networks.

2. Description of the Related Art

Virtual meetings are now widely popular as an alternative for face-to-face meetings. For example, programs such as Skype® offer basic videoconferencing and screen sharing tools. Other programs including WebEx®, Zoom®, Join.Me® and GoToMeeting® offer the ability to share multiple screens, add annotations and control a computer desktop.

The need to document virtual meetings has been recognized. For example, U.S. Patent Application Publication No. 2015/0244749 proposes a system for managing a virtual meeting. By suitably configuring a graphical user interface a recording of audio and video data from the virtual meeting may be made accessible.

SUMMARY OF THE INVENTION

According to disclosed embodiments of the invention, virtual meetings can be unintrusively recorded, transparently to the participants. A virtual participant emulates a human attendee, logging into a meeting supported by a conventional videoconferencing program. The virtual participant is tasked with listening, storing, aggregating and organizing a stream multimedia data that is presented by the participants during the virtual conference. The virtual participant can also actively participate in the meeting by injecting sound and textual notifications and by interactively responding to requests made by the human participants through the video conferencing software in the form of voice or chat commands.

There is provided according to embodiments of the invention a method of conference recording, which is carried out by identifying a virtual conference operated by a conferencing system connected to a communications network. The method is further carried out by executing a virtual participant process in a processor, registering the virtual participant process with the conferencing system as a co-participant in the virtual conference, and recording information streams of the human participants with the virtual participant process.

According to an aspect of the method, executing a virtual participant process is accomplished by spawning a virtual

machine in the processor and executing the virtual participant process in the virtual machine.

One aspect of the method includes executing a recording component process, which is cooperative with the virtual participant process to receive the information streams.

According to a further aspect of the method, the virtual participant process is operative to record an event occurring in the virtual conference and to communicate with one or more of the human participants responsively to the event.

Still another aspect of the method includes transmitting an output of the recording component to one or more of the human participants during the virtual conference.

According to an additional aspect of the method, the output of the recording component is accessible during the virtual conference to entities that are not participants in the virtual conference.

According to another aspect of the method, the virtual participant process is operative to execute a response to commands from one of the human participants.

According to still another aspect of the method, the response includes a transmission into the virtual conference of at least one of a sound notification, a textual notification, and a report of requested information.

In still another aspect of the method the human participants include a dynamically selected active speaker. The method includes identifying the active speaker with the virtual participant process, and associating a current one of the information streams with the active speaker.

According to yet another aspect of the method, the conferencing system is operative to generate an indication of the active speaker, and identifying the active speaker includes recognizing the indication.

According to one aspect of the method, registering the virtual participant process with the conferencing system is performed by emulating human interactions with a graphical user interface.

According to a further aspect of the method, registering the virtual participant process is performed by modifying at least one of a registry entry, a configuration file, and an internal database in the conferencing system.

An additional aspect of the method the virtual participant process is operative for recording information streams in a plurality of multimedia channels and combining the recorded information streams into a common stream.

Another aspect of the method includes concurrently executing a plurality of virtual participant processes in respective virtual conferences.

There is further provided according to embodiments of the invention a method which is carried out by obtaining a schedule of virtual conferences, spawning respective virtual machines to provide virtual participant processes for a portion of the virtual conferences in the schedule, and while monitoring performance of the virtual machines during the virtual conferences, detecting a failure of one of the virtual machines to perform in accordance with a predefined standard, and thereafter terminating the one virtual machine and launching a replacement virtual machine.

An aspect of the method includes determining that one of the virtual conferences has completed, and thereafter reassigning the virtual machine thereof to a new conference.

There is further provided according to embodiments of the invention a system including a server connected to a communications network and a recording component linked to the server. The server is operative for identifying a virtual conference operated by a conference server connected to the communications network, spawning a virtual machine, executing a virtual participant process in the virtual machine, and registering the virtual participant process with the conference server as a coparticipant in the virtual conference. The recording component is cooperative with the server for recording information streams of the human participants using the virtual participant process.

According to another aspect of the system, the server is operative during the virtual conference for transmitting an output of the recording component to one or more of the human participants.

According to an additional aspect of the system, the output of the recording component is made accessible during the virtual conference to entities that are not participants in the virtual conference.

According to a further aspect of the system, the server is operative for obtaining a schedule of virtual conferences, spawning respective virtual machines to provide virtual participant processes for a portion of the virtual conferences in the schedule, monitoring performance of the virtual machines during the virtual conferences to detect a failure of one of the virtual machines to perform in accordance with a predefined standard, terminating the one virtual machine and launching a replacement virtual machine.

According to one aspect of the system the server is operative for determining that one of the virtual conferences has completed, and thereafter reassigning the virtual machine thereof to a new conference.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

For a better understanding of the present invention, reference is made to the detailed description of the invention, by way of example, which is to be read in conjunction with the following drawings, wherein like elements are given like reference numerals, and wherein:

FIG. **1** is a block diagram of a system for carrying out the invention;

FIG. **2** is a flow chart of a method of recording a virtual conference in accordance with an embodiment of the invention;

FIG. **3** is an exemplary screen display of the status of a conference in accordance with an embodiment of the invention;

FIG. **4** is a flow chart of a method of recording on-line conferences in accordance with an embodiment of the invention;

FIG. **5** is a screen display illustrating participant recording and content selection in accordance with an embodiment of the invention;

FIG. **6** is a block diagram illustrating the operation of a recording component in accordance with an embodiment of the invention;

FIG. **7** is a screen display that illustrates organization of recording component activities in a plurality of conferences in accordance with an embodiment of the invention;

FIG. **8** is a block diagram illustrating an aspect of the recording component operations in accordance with an embodiment of the invention;

FIG. **9** is a block diagram illustrating supervisory aspects of recording component operations in accordance with an embodiment of the invention; and

FIG. **10** is a block diagram of a portion of the system shown in FIG. **1** in accordance with an alternate embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, numerous specific details are set forth in order to provide a thorough understanding of the various principles of the present invention. It will be apparent to one skilled in the art, however, that not all these details are necessarily always needed for practicing the invention. In this instance, well-known circuits, control logic, and the details of computer program instructions for conventional algorithms and processes have not been shown in detail in order not to obscure the general concepts unnecessarily.

Documents incorporated by reference herein are to be considered an integral part of the application except that, to the extent that any terms are defined in these incorporated documents in a manner that conflicts with definitions made explicitly or implicitly in the present specification, only the definitions in the present specification should be considered.

Aspects of the present invention may be embodied in software programming code, which is typically maintained in permanent storage, such as a computer readable medium. In a client/server environment, such software programming code may be stored on a client or a server. The software programming code may be embodied on any of a variety of known non-transitory media for use with a data processing system, such as a USB memory, hard drive, electronic media or CD-ROM. The code may be distributed on such media, or may be distributed to users from the memory or storage of one computer system over a network of some type to storage devices on other computer systems for use by users of such other systems.

Definitions

The terms “link”, “links”, “couple” and “couples” are intended to mean either an indirect or direct connection. Thus, if a first device couples to a second device, that connection may be through a direct connection, or through an indirect connection via other devices and connections.

As used herein, the term “file” should be interpreted broadly to include any type of data organization whether file-based or block-based. Further, as used herein, the term “file system” should be interpreted broadly as a programmatic entity that imposes structure on an address space of one or more physical or virtual disks so that an operating system may conveniently deal with data containers, including files and blocks.

The term “network” is intended to represent any of a variety of conventional network topologies and types (including wired and/or wireless networks), employing any of a variety of conventional network protocols (including public and/or proprietary protocols). Network may include, for example, the Internet, the public switched telephone network, as well as portions of one or more local area networks (LANs) and/or wide area networks (WANs).

The terms “conference” and “virtual conference” also known as a “call” or “virtual meeting”, refer to a discussion or presentation involving two or more remote participants.

System Overview

Turning now to the drawings, reference is initially made to FIG. **1**, which is a block diagram of a system **10** that is suitable for carrying out the invention. The system **10** typically comprises one or multiple interconnected general purpose or embedded computer processors in one or multiple computers, which are programmed with suitable software for carrying out the functions described hereinbelow. Thus, although the system **10** is shown as comprising a number of separate functional blocks, these blocks are not necessarily separate physical entities, but rather represent different computing tasks or data objects stored in a memory that is accessible to the processor. These tasks may be carried out in software running on a single processor, or on multiple processors. The software may be embodied on any of a variety of known non-transitory media for use with a computer system, such as a diskette, or hard drive, or CD-ROM. The code may be distributed on such media, or may be distributed to the system **10** from the memory or storage of another computer system (not shown) over a network. Alternatively or additionally, the system **10** may comprise digital signal processors, field programmable gate arrays or hard-wired logic.

Included in the system **10** is a conferencing processor **12**, which may be comprised of one or more interconnected computers. The conferencing processor **12** is accessed by any number of users, here represented by users **14**, **16**, **18**, who participate in a virtual conference. The links between the conferencing processor **12** and the users **14**, **16**, **18** may involve voice transmission or voice communication over a wired telephone **20** (user **16**), mobile, or wireless telephone device **22** (user **18**) connected to a modem or the like in the conferencing processor **12** as shown in FIG. **1**, or indirectly via a service provider (not shown) that is connected to the conferencing processor **12** via a network **24**. Alternatively, there may be a link via a computing device **26** connected to the data network **24** (user **14**). Indeed, any device capable of supporting a voice channel may be used to establish a direct or indirect link to the conferencing processor **12**.

Conventional web conferencing software **28** is configured to host the virtual conference. It may execute on conferencing processor **12**, controlled by the vendor of the conferencing software **28**. Alternatively, computer-based participants, such as the user **14**, may execute an instance of the conferencing software **28** (CS) on the computing device **26**, or may interact via an interface or browser with the conferencing software **28** when it executes in the conferencing processor **12**. The conferencing software **28** is sometimes discussed with reference to the above-noted WebEx product. This is by way of example and not of limitation, as the inventive system is operable, mutatis mutandis, with many conventional web conferencing software products.

Also involved in the conference is an autonomous conference monitoring system **34** that is implemented on one or more servers such as server **36**. One component of the system **34** is a process referred to as a virtual participant **30**, which emulates certain actions with respect to the conference that are conventionally performed by human participants and which are described in detail hereinbelow. The virtual participant **30** may be responsive to commands from one or more of participants, and may be provided with additional intelligence as described below. The virtual participant **30** is spawned and executed by the server **36**, which is connected to the network **24** as shown in FIG. **1**.

The system **34** comprises a recorder component **32** that connects to the conference in a manner explained below, and operates cooperatively with the virtual participant **30** to capture the users' activities in the conference. The recorder component **32** and the virtual participant **30** are tasked with listening, aggregating and organizing streams of data, typically multi-media data, which are presented by the participants during the virtual conference. The recorder component **32** is interoperable with conferencing software products produced by many vendors and may interact with a conferencing system that may be realized as the conferencing processor **12** using a vendor-provided application programming interface (API).

The system **34** may comprise a recording supervisor **38**, which has administrative functions. The recording supervisor **38** may be operated by a different entity than the conferencing processor **12**. The recording supervisor **38** conducts monitoring, reporting, testing and various other actions necessary for control and operation of the virtual participant **30** and the recorder component **32**. It may concurrently control virtual participants in many conferences.

A web interface **31** may be provided in the system **34** to enable a human participant and the virtual participant **30** to interact.

Reference is now made to FIG. **2**, which is a flow chart of a method of recording a virtual conference in accordance with an embodiment of the invention. The process steps are shown in a particular linear sequence for clarity of presentation. However, it will be evident that many of them can be performed in parallel, asynchronously, or in different orders. Those skilled in the art will also appreciate that a process could alternatively be represented as a number of interrelated states or events, e.g., in a state diagram. Moreover, not all illustrated process steps may be required to implement the method.

In initial step **40** the details of the conference to be recorded are obtained, such as a connection URL, phone number or host user id and optionally a password or key. Such information can be obtained, for example, from the conference provider via an AP1. Listing 1 is an exemplary SOAP (Simple Object Access Protocol) to obtain conference details from WebEx servers.

Alternatively, the conference details may be obtained from users, or from email invitations sent to prospective participants. Additionally or alternatively potential conference information can be obtained from users' calendar, customer relationship management (CRM) and/or call scheduling software when suitable access is granted.

Then, in step **42** an instance of a virtual operating system (OS) or virtual machine, e.g., a Windows® machine is spawned, which may have an instance of the conferencing software **28** (or a suitable interface to the conferencing software **28**) preloaded. Alternatively, a real rather than virtual machine can be assigned, e.g., from a pool of idle machines, that has the conferencing software **28** preloaded. Step **42** can be performed according to the scheduled time of the conference before the first participant joins the meeting as shown in FIG. **2**. Alternatively, step **42** can be performed upon recognition of the first participant, or when recordable conference activity occurs.

As will be seen, the virtual participant **30** is configured by the virtual operating system to emulate a human participant, and is specialized for monitoring activities of the conference and its participants.

The conferencing software **28** interacts with conference participants via a graphical user interface. In one embodiment this can be an emulation of a Windows application. Alternatively, a browser may be spawned and caused to connect to the web conference using browser emulation, or using the interface provided by the vendor the conferencing software **28**. The recorder component **32** of the virtual participant **30** connects to the conference in step **44** as though it were an attendee (with a configurable attendee name) and commences its recording activities upon occurrence of some predefined event, e.g., a time signal, speech from the moderator, or a participant. The conference to join may be identified by a connection URL, conference number, telephone number and/or user identifier of the human host. To join the conference, the recorder component **32** emulates a set of mouse clicks, key strokes and other actions that mimic a human participant joining a virtual conference. The recorder component **32** interacts with the same user interface of the conferencing software **28** as a human user, and is interoperable with versions of conferencing software produced by many vendors. The conferencing software **28** might be unaware that the virtual participant **30** is an automated computer process rather than a transmitter of human-initiated actions. However, one or more human participants may be aware of and even control the activities of the virtual participant **30**.

An HTTP proxy server or other communication interception systems suitable to the protocol used by the vendor may be utilized by the recorder component **32** to actively intercept communications to and from the conferencing processor **12** and the conferencing software **28**. The proxy server may route such communications to the virtual participant **30**, which can track the communications and interpose responses as needed, or modify communications directed from an originating server to the conferencing processor **12**.

The recorder component **32** collects and stores text messages produced during the call, and associates them with corresponding timestamps. For example:

Assume that a participant in a web conference is having a conversation with multiple people. During the conversation the participant wants to take note of an important piece of the conversation. The participant sends a private chat message to the virtual participant **30**, e.g., via a chat mechanism provided by the conferencing software **28**.

The recorder component **32** receives the chat message, stores it and associates it with a timestamp. Later on, the participant can come back to listen to the recording of the call, and can access the point in time corresponding to the timestamp using a web interface.

At step **46** a new participant signs in to the conference by any of the methods discussed above.

In practice, assembling the participants in a virtual conference may be a sequential process, as shown by delay step **48** where a request to join the conference by another participant is awaited. When this occurs, control returns to step **46**. It will be apparent that the virtual participant **30** may record events in the conference even though not all attendees have yet arrived.

Reference is now made to FIG. **3**, which is an exemplary WebEx screen display of the status of a conference in accordance with an embodiment of the invention. As explained above, in order to initiate the virtual participant **30** (FIG. **1**) a virtual machine is spawned and typically executes on a server that is accessible via the Internet. The virtual participant **30** does not have intrinsic audio capabilities. Instead, the recorder component **32** has an installed audio driver, which captures audio output from the conference to be recorded. In other words, the audio driver functions as a virtual sound adapter.

The recorder component **32** also has facilities for scanning the windows using known methods and reading textual material presented by the conferencing software **28**, e.g., by optical character recognition. The recorder component may be provided with pattern recognition facilities and other known artificial intelligence programs in order to automate manipulation of the graphical user interface and the conferencing software **28** or to record and interpret selected portions of the windows displayed by the graphical user interface. The Java® code in Listing 2 indicates one aspect of automated control of the conferencing software **28** by closing an audio connection window.

In addition to host **50**, one attendee **52**, identified as “Rich”, previously joined the conference as a new participant by telephone and is currently the active speaker. The virtual participant **30** (FIG. **1**), indicated in FIG. **3** by an icon **54**, has been spawned and is actively monitoring the proceedings, recording presentations as information streams (voice and multimedia) of both host **50** and attendee **52**. The recorder component of the virtual participant **30** obtains at least a portion of its input from the virtual sound adapter described above.

Reference is now made to FIG. **4**, which is a flow chart of a typical sequence of recording on-line conferences in accordance with an embodiment of the invention. According to the rules of a particular conference, one participant has the “floor” of the conference at any time and is designated as the active speaker. At initial step **56** one of the participants becomes the active speaker according to the rules of the particular conference and those of the conferencing software **28** (FIG. **1**). For example, some participants may have observer status, and only become active on request, while other participants are privileged to speak at any time during the meeting. The conferencing software **28** displays the active speaker at step **58**. The announcement is sensed at step **60** by the virtual participant **30**, which registers the speech time and duration. Additionally or alternatively, multimedia productions may be recorded by the virtual participant **30**.

In other conferences it is common for multiple participants to speak concurrently. The virtual participant **30** may receive multiplexed audio, and is capable of capturing audio signals and tracking the concurrently speaking participants.

After a delay step **62** the active speaker eventually relinquishes the floor of the virtual conference. An indication of this event is presented by the conferencing software **28**. The virtual participant, which continues to scan the windows or other data produced by the conferencing software **28**, notes that the current participant is no longer the active speaker. Control then returns to initial step **56**. After the recording is complete, the audio and the video may be re-compressed using a lossless algorithm to ensure no loss of information and loaded to the cloud for further processing. Transfer of the compressed data to the cloud may occur at any time, for example, in real time as the attendees are speaking. Alternatively, the transfer may occur after the conference ends.

Reference is now made to FIG. **5**, which is an example of participant recording and content selection on a screen display presented by the conferencing software **28** (FIG. **1**) during the course of a conference in accordance with an embodiment of the invention. Different conferencing software may provide other formats and indications of the active speaker. Based on a textual indication **70** provided by the conferencing software **28**, the virtual participant **30** (indicated in FIG. **5** by icon **72**) identifies participant Sindu **74** as being the active speaker. Relevant locations on the screen are identified by indications from the conferencing software **28** (FIG. **1**). Additionally or alternatively the relevant indications can be derived from the layout of the windows, from window names or class names, from text displayed within the window, or from the structure of an HTML page displayed within a browser window. Alternatively, the virtual participant **30** may record the entire screen for processing off line. In any case the virtual participant **30** records speech of participant Sindu **74**.

During the conference the recorder component **32** of the virtual participant **30** records both audio and video data and compress them on the fly. As noted above, the recorder component **32** creates a virtual sound driver or adaptor that the conferencing software application “plays” to, and listens to the sound adaptor of the recorder component **32**. The recorder component **32** monitors the application, enabling the virtual participant **30** to detect a variety of normal and abnormal conditions that may depend on the application, for example:

(1) The host joined or left the conference.

(2) Video conferencing started or ended.

(3) The conference terminated abruptly.

(4) The virtual participant was ejected from of the conference (perhaps to protect a private discussion).

At the end of the conference the resulting recorded media and the meta-data accumulated during the call are transferred by the recording component **32** to permanent storage such as database, file system or distributed storage facility (e.g. Amazon S3).

Using the recorder component **32** the virtual participant **30** may listen to the audio channel to detect start and end of the conference based on silence, or the sounds of people joining and leaving.

Reference is now made to FIG. **6**, which is a block diagram illustrating the operation of a recording component in accordance with an embodiment of the invention. Transmitter-receiver **76** is connected to virtual audio adaptors **78**, **80**, which in turn link to conferencing software **82**. Audio input to be recorded is received in the transmitter-receiver **76** via virtual audio adaptor **80**. Audio output is transmitted from the transmitter-receiver **76** to manipulate the conferencing software **82** via transmitter-receiver **76**. Participation by a virtual participant in a conference may comprise announcements such as “Welcome, the virtual participant”, or “Your call is recorded”. Additionally or alternatively the virtual participant may present recorded material such as templates.

When it starts recording, each recording component enables a real-time communication channel that provides metadata about the call, e.g., the number of participants as well as access to the audio and video stream. Audio is typically compressed, e.g., to FLAC or MP3 format in order to support playing in standard web browsers. Near real-time speech recognition can be applied to provide alerts to users. For example, significant words such as “competition”. Transmitter-receivers may also be configured to “speak” to the conference. The recording component may make its output available during the conference, with minimal delay to all the human participants, and optionally to outside entities that are not participants in the conference.

The recording component in a conference may aid management of a conferencing server or web site. Reference is now made to FIG. **7**, which is a screen display that illustrates organization of the activities of recording components in a plurality of conferences in accordance with an embodiment of the invention. The status of conferences **84**, **86**, **88** is displayed in the right portion of the screen. Further details and configuration options for the conferencing software are available from the selection in left pane **90**. When recording is in progress, managers can listen to and view the proceedings live.

Reference is now made to FIG. **8**, which is a block diagram illustrating an aspect of recording component operations in accordance with an embodiment of the invention. Each transmitter-receiver **92** may emit respective audio streams modulated by any suitable protocol, e.g., pulse code modulation (PCM). The streams may then be transmitted to a web user (not shown) as an MP3 stream, which can be used, for example by managers as described above with respect to FIG. **7**. A streamer **94** may provide an indication of the current speaker and other metadata in an additional non-audio stream. Similarly, in another embodiment each transmitter-receiver **92** may emit video streams, which are then transmitted to a web user as a set of images or as a continuous video stream encoded using a protocol such as MP4, which can be used to view the screen share in real time.

The system **10** (FIG. **1**) is designed to scale up, limited only by the capacity of the hardware. Reference is now made to FIG. **9**, which is a block diagram illustrating detailed functions carried out by the recording supervisor **38** (FIG. **1**) in the system in accordance with an embodiment of the invention. In this embodiment the recording supervisor **38**, typically executing on server **36** (FIG. **1**) monitors a queue of incoming calls in a memory **98**, and launches new virtual operating systems with their recording components **100**. Recording supervisor **38** loads machines as needed using an infrastructure as a Service (IaaS) cloud or data-center AP1, e.g., Amazon EC2, OpenStack or VMWare, and may provision extra instances of the virtual operating system, represented in FIG. **9** by recording component **102**. Recording supervisor **38** monitors the virtual operating systems to ensure they load properly, and if not, replaces them.

When a virtual operating system loads, it starts a sequence of setup and provisioning steps that prepares the virtual machine for operation as the virtual participant **30**, and may update the software on the virtual machine to the latest version, particularly the recorder software. Recording components **100** become operational when the virtual participant **30** joins the conference and records events as described above. The recording supervisor **38** and the recording components **100** may be distributed across multiple networks (FIG. **1**) and can be replicated to servers in multiple geographic regions in order to provide a fail-safe operation and decrease latency for users around the world.

The recording supervisor **38** includes diagnostic subsystem **104** and monitoring subsystem **106** that monitors progress of the virtual operating systems and the recording components **100**. The monitoring subsystem **106** receives current updates and diagnostic information that is processed by the diagnostic subsystem **104** from the recording components **100**, assesses system health, and intervenes in operations when errors are detected. The recording supervisor **38** continuously:

(1) checks whether new virtual machines need to be spawned, and does so as needed;

(2) checks whether existing virtual machines are “stuck” (halted) or otherwise are failing to perform with a predefined standard. If so, the recording supervisor **38** replaces them with newly spawned machines;

(3) checks whether any the operation of virtual machines are complete, and terminates them accordingly. For example, termination may result from an absence of audio input for a predetermined period, or exit of all the participants from the conference. Such events may cause the virtual participant **30** to disconnect from the conference; and

(4) checks whether any recording component **100** can be reused for a subsequent conference and if so—refrains from shutting it down and instead assigns it a new role. In addition, the supervisor component receives the data collected by the recorders, i.e., the success or failure of the call, its metadata such as duration, list of participants (typically tracked and updated in realtime), as well as pointers, e.g., URLs to the actual video and audio files that may be referenced in the conference.

When launching new virtual machines, the recording supervisor **38** may decide which machines and machine types to launch based on the schedule of the conferences as well as on the technical capabilities required and cost. For example, the recording supervisor may decide to launch an

Amazon Spot instance (priced lower than other options). It may also launch different recorder systems based on the needs of a particular conference provider; for example—an audio-only provider may require less computing resources to record, and an appropriate (less expensive) recording system may be consequently launched.

Alternate Embodiments

As an alternative to using keyboard and mouse emulation, alternate embodiments may examine or modify registry entries, configuration files, or internal database files of the conference software to gather or provide necessary information. Examples are given in Listing 5 and Listing 6.

The previous embodiment is implemented using Windows objects and UI Automation application programming interfaces, together with optical character recognition to interact in near real time with the conferencing software. Alternatively the process memory of the conferencing software, if accessible, could be examined and information extracted, e.g., the identity of the current active speaker. Alternatively such information could be gathered by intercepting communication to the server hosting the conferencing software. Alternatively, when the conferencing software runs within a web browser, the information can be gathered by scanning its document object model (DOM) and identifying the elements that contain the relevant information. The DOM can also be manipulated to emulate user interaction with the application.

In another alternative embodiment image processing methods may be used in order to understand the structure of a video presentation.

In some embodiments the virtual participant **30** (FIG. **1**) may interact, using the recorder component **32** with the participants via chat messages. For example, the organizer may decide to send the recorder a message “#pause” in which case recording is suspended. More sophisticated interaction may be performed by connecting it to a back end process. For example a request from the organizer to provide details about a particular participant #details James—provide me all the details about James from a database available to the system **34**.

Reference is now made to FIG. **10**, which is a block diagram of a portion of the system **34** in accordance with an alternate embodiment of the invention. In this embodiment the virtual participant **30** may react to other chat messages, including commands (“quit!”; “stop recording!”), and requests for information.

Optionally, the virtual participant **30** may have an expanded role, acting as a proactive agent, i.e., a virtual administrative assistant, to obtain many types of information that may facilitate the conference, provide correlations in near realtime with prior statements of other participants, and marshal information from outside sources to empower its controller in the conference. For example, the virtual participant **30** might, upon request of its controller, or autonomously invoke a conventional search engine to identify prior inconsistent statements of another participant that were made earlier in the conference, or even made at another conference. Those skilled in the art of virtual conferencing may envision many such enhancements of the role of the virtual participant **30**.

Moreover, in its role as a virtual assistant the virtual participant **30** can play predefined media or presentations, send reminder text messages to prospective participants, take notes to be presented in the meeting page, send email messages to human participants containing the notes and/or

recorded meeting information, check availability of additional participants and ask them to join, check sound quality of the call, and provide other call-related services.

Events occurring during the conference may be submitted to an analysis module **33**, for example, statements made during the conference, entrance and exit of human participants. Such items are evaluated by the analysis module **33**, received in the virtual participant **30**, and conclusions of the analysis module **33** or other indications of the events communicated to its controlling participant while the conference is in progress, even in near real time, along with portions of the recordings of the recorder component **32**. The analysis module **33** may incorporate circuitry to implement many known methods of artificial intelligence to assist its operation. Specifically, the functionality including the virtual participant receiving voice or chat commands and responding by voice or chat messages employs voice recognition/generation methods and natural language processing (NLP) methods.

In one mode of operation the virtual participant **30** and the analysis module **33** may implement rules regarding conference events, which when triggered cause alerts to be transmitted to one or more of the human participants.

Other Implementation Details.

Listing 3 illustrates modifying the registry to insert the name of a current virtual participant.

Listing 4 illustrates spawning a transmitter-receiver for a virtual participant in a separate process.

Listing 5 illustrates joining a Zoom meeting by a virtual participant.

Listing 6 illustrates one way of controlling a web browser for use by a virtual participant.

Listing 7 is a code fragment that enables a web browser to access the audio stream of the computer hosting the conferencing software **28** (FIG. **1**).

It will be appreciated by persons skilled in the art that the present invention is not limited to what has been particularly shown and described hereinabove. Rather, the scope of the present invention includes both combinations and sub-combinations of the various features described hereinabove, as well as variations and modifications thereof that are not in the prior art, which would occur to persons skilled in the art upon reading the foregoing description.

Computer Program Listings

Listing 1

```
<?xml version=“1.0” encoding–“UTF-8”?<
serv:message xmlns:xsi=“http://www.w3.org/2001/XMLSchema-instance”
xmlns:serv=“http://www.webex.com/schemas/2002/06/service”
xmlns:th=“http://www.thymeleaf.org”
xmlns:extra=“http://www.honeyfy.com/extra”>
<!--/*@thymesVar id=“startFrom” type=“java.lang.String”*/-->
<!--/*@thymesVar id=“maxItems” type=“java.lang.Integer”*/-->
<!--/*@thymesVar id=“startDateTime” type=“java.lang.String”*/-->
<header th:include=“t1/webexintegration/header.xml::header”></header><body>
<bodyContent type=“java:com.webex.service.binding.meeting
  LstsummaryMeeting” extra:attrnamespace=“type=xsi”>
<listControl th:if=“${maxItems!=null}”>
```

```
<startFrom th:if=“${startFrom}”
   th:text=“${startFrom}”>1</startFrom>
<maximumNum
th:text=“${maxItems}”>50<maximumNum>
</listControl>
<order>
<orderBy>STARTTIME</orderBy>
<orderAD>ASC</orderAD>
</order>
<dateScope>
<startDateStart th:text=“${startDateTime}”></startDateStart>
</dateScope>
</bodyContent>
</body>
</serv:message>
```

Listing 2

```
private final IUIAutomationCondition
   IS_AUDIO_CONNECTION=createNameCondition
   (“Audio Connection”);
private final in IUIAutomationCondition
   IS_CLOSE=createNameCondition(“Close”);
private final in IUIAutomationCondition
   IS_OK=createNameCondition(“OK”);
default IUIAutomationCondition
   createNameCondition(String uiAutomationPropertyName){
   return createPropertyCondition
   (PropertyID.UIA_NamePropertyId, uiAutomationPropertyName);
}
default IUIAutomationCondition
   createPropertyCondition(int propertyId, String value) {
   return getUIAutomation( ).createPropertyCondition
(propertyId, value);
}
private boolean closeAudioConnectionPopup( ) {
   final IUIAutomationElement audioConnectionPopup=
   findFirstChild(meetingWindowElement, IS_AUDIO_
CONNECTION);
if (audioConnectionPopup!=null) {
   logger.warn(INTERRUPTION_MESSAGE,
   MethodNameGetter.getMethodName( ));
   return findAndClick(audioConnectionPopup,
IS_CLOSE, “close button”,
   2) ||findAndClick(audioConnectionPopup, IS_OK, “OK
button”, 2);
   }
   return false;
}
```

Listing 3

```
WindowsRegistry.set
   (“HKEY_
      CURRENT_USER\\Software\\Citrix\\GoToMeeting\\
      UI”,“remMyN”, participantName, logger);
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
      Meeting\\UI”,“remMyE”, participantEmail, logger);
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
      Meeting\\UI”, “remShowScreenNameEmailDialog”,
      UnsignedLong.ZERO, logger);
// keep the side-bar always on top of other windows
```

```
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
      Meeting\\UI”, “remAttendeeViewerAlwaysInFront”,
      UnsignedLong.ONE, logger);
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
   Meeting”, “QuickConnect”,“true”,logger);
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
   Meeting”, “RunAtLogon”,“false”,logger);
WindowsRegistry.set
   (“HKEY_CURRENT_USER\\Software\\Citrix\\GoTo
   Meeting\ Audio”,“remJoinMuted”,“true”,logger);
```

Listing 4

```
ImmutableList.Builder<String>cmdLine=new
ImmutableList.Builder<String>( )
   .add(ffmpegPath.toString( ))
   .add(“-f”)
   .add(“gdigrab”)
   .add(“-draw_mouse”)
   .add(“0”);
   cmdLine.add(“-y”) // yes confirmation
   .add(“-r”) // recording frame rate
   .add(“12”) // fps
   .add(“-i”) // input desktop
   .add (“desktop”)
   .add(“-r”) // grabbing frame rate
   .add(“12”) // fps
   .add(“-f”)
   .add(“dshow”)
   .add(“-i”) // audio input:
   .add(“audio=”+audioInputDeviceName)
   .add(“-vcodec”) // video codec:
   .add(“libx264”) //H.264
   .add(“-pix_fmt”) // pixel format:
   .add(“yuv420p”) // YUV (rather than RGB)
   .add(“-tune”) // performance tuning:
   .add(“stillimage”) // suitable for slides/demos
   .add(“-preset”) // compression algorithm required CPU
consumption/speed
   .add (“ultrafast”)
   .add(“-qp”) // enabling loss-less video
   .add(“o”) // as recommended over -crf by https://trac.ffmpeg.org/wiki/Encode/H.264
   .add(“-acodec”) // audio codec:
   .add(“flac”) // loss-less flac
   .add(“-compression level”)
   .add(“4”) // reasonable compression level
   .add(“-ar”) // sampling rate:
   .add(“16000”) // 16 kHz
   .add(“-ac”) // audio channels:
   .add(“1”) // mono
   .add (String.valueOf(maxDuration))
   .add (outputVideoPath.toString( ));
```

Listing 5

```
/**
* Create zoom app meeting join URI based on
* <a href=“https://support.zoom.us/hc/en-us/articles/
202531535-Client-Installation”>Article</a>
*
*@param participantName The participant name to use
*@param meetingNumber The number of the meeting to
join
```

```
* @return App URI to join the meeting
*/
private String createZoomAppJoinUri(String participant-
Name, String meetingNumber,
Optional<String>optionalMeetingPassword)
{
   final UriComponentsBuilder
uriComponentsBuilder=UriComponentsBuilder.new
Instance( );
   uriComponentsBuilder
   .scheme("zoommtg")
   .host("zoom.us")
   .path("join")
   .queryParam("action", "join")
   .queryParam("confno", meetingNumber)
   .queryParam("uname", participantName);
   optionalMeetingPassword.ifPresent(password->
   uriComponentsBuilder.queryParam("pwd", password));
   return uriComponentsBuilder.toUriString( );
}
```

Listing 6

```
private ChromeDriverExecutorService startChromeBrowserWithSeleniumDriver(Path
chromeDriverLocation, ChromeDriverExecutorService.HttpResponseFilter httpResponseFilter,
Map<String, Object>connectorParams) {
   final Optional<ChromeDriverExecutorService.ProxySettings> optionalProxySettings =
isProxyEnabled (connectorParams) ?
         Optional.of(new ChromeDriverExecutorService.ProxySettings(
            9000,
Paths.get("com/honeyfy/connectors/GoToMeetingWebConnector/Proxy/proxy.pac.js"),
            httpResponseFilter)) :
         Optional.empty( );
   try{
         return new ChromeDriverExecutorService(
            chromeDriverLocation,
            "com/honeyfy/connectors/GoToMeetingWebConnector/Chrome/Profile",
            traceFilesPath,
            optionalProxySettings,
            Connector.MDC_FORWARD1NG_KEYS);
      }catch (WebDriverException e) {
         throw new FallbackConnector.RetryableException(null, this.getClass( ), "Failed to launch
   Chrome", e);
      }
}
```

Listing 7

```
            {
            {. . .
            . . .
               "profile": {
               "default_apps_install_state": 3,
               "content_settings": {
               "exceptions": {
                  "media_stream_mic" : {
                     "https://app.gotomeeting.com:443, *": {
                     "setting":1
                  }
               }
             }
            "default_content_setting_values": {
            "automatic_downloads":
            }
          }
```

The invention claimed is:

1. A method of conference recording, comprising the steps of:

identifying a plurality of virtual conferences being operated by a conferencing system connected to a communications network, the virtual conferences having human participants;

executing a plurality of virtual participant processes in a processor;

registering the virtual participant processes with the conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface; and

recording information streams of the human participants using the virtual participant processes.

2. The method according to claim **1**, wherein executing a plurality of virtual participant processes comprises:

spawning a virtual machine in the processor and executing the virtual participant processes in the virtual machine.

3. The method according to claim **1**, further comprising executing a recording component process, wherein the recording component process is cooperative with the virtual participant processes to receive the information streams.

4. The method according to claim **3**, wherein the virtual participant processes are operative to record an event occurring in the virtual conferences and to communicate with one or more of the human participants responsively to the event.

5. The method according to claim **4**, further comprising during the virtual conferences transmitting an output of the recording component to one or more of the human participants.

6. The method according to claim **5**, wherein the output of the recording component is accessible during the virtual conferences to entities that are not participants in the virtual conferences.

7. The method according to claim **1**, wherein the virtual participant processes are operative to execute a response to commands from one of the human participants.

8. The method according to claim **7**, wherein the response comprises a transmission into one of the virtual conferences of at least one of a sound notification, a textual notification, and a report of requested information.

9. The method according to claim **1**, wherein the human participants include a dynamically selected active speaker, the method further comprising the steps of:

with the virtual participant processes identifying the active speaker; and associating a current one of the information streams with the active speaker.

10. The method according to claim **9**, wherein the conferencing system is operative to generate an indication of the active speaker, and identifying the active speaker comprises recognizing the indication.

11. The method according to claim **1**, wherein registering the virtual participant processes is performed by modifying at least one of a registry entry, a configuration file, and an internal database in the conferencing system.

12. The method according to claim **1**, wherein the virtual participant processes are operative for recording information streams in a plurality of multimedia channels, further comprising combining the recorded information streams into a common stream.

13. A method comprising the steps of:

obtaining a schedule of virtual conferences;

spawning respective virtual machines to provide virtual participant processes for a portion of the virtual conferences in the schedule;

monitoring performance of the virtual machines during the virtual conferences;

while monitoring performance detecting substandard execution of one of the virtual machines according to a predefined standard; and

thereafter terminating the one virtual machine and launching a replacement virtual machine.

14. The method according to claim **13**, further comprising the steps of:

determining that one of the virtual conferences has completed; and

thereafter reassigning the virtual machine thereof to a new conference.

15. The method according to claim **13**, wherein the virtual conferences have human participants, further comprising executing a recording component process, wherein the recording component process is cooperative with the virtual participant processes to receive information streams of the human participants.

16. The method according to claim **15**, wherein the virtual participant processes are operative to record an event occurring in the virtual conferences and to communicate with one or more of the human participants responsively to the event.

17. The method according to claim **16**, further comprising during the virtual conferences transmitting an output of the recording component to one or more of the human participants.

18. The method according to claim **17**, wherein the output of the recording component is accessible during the virtual conferences to entities that are not participants in the virtual conferences.

19. The method according to claim **15**, wherein the virtual participant processes are operative to execute a response to commands from one of the human participants.

20. The method according to claim **19**, wherein the response comprises a transmission into the virtual conferences of at least one of a sound notification, a textual notification, and a report of requested information.

21. The method according to claim **15**, wherein the human participants include dynamically selected active speakers, the method further comprising the steps of:

with the virtual participant processes identifying the active speakers; and

associating respective current ones of the information streams with the active speakers.

22. The method according to claim **13**, further comprising registering the virtual participant processes with a conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface.

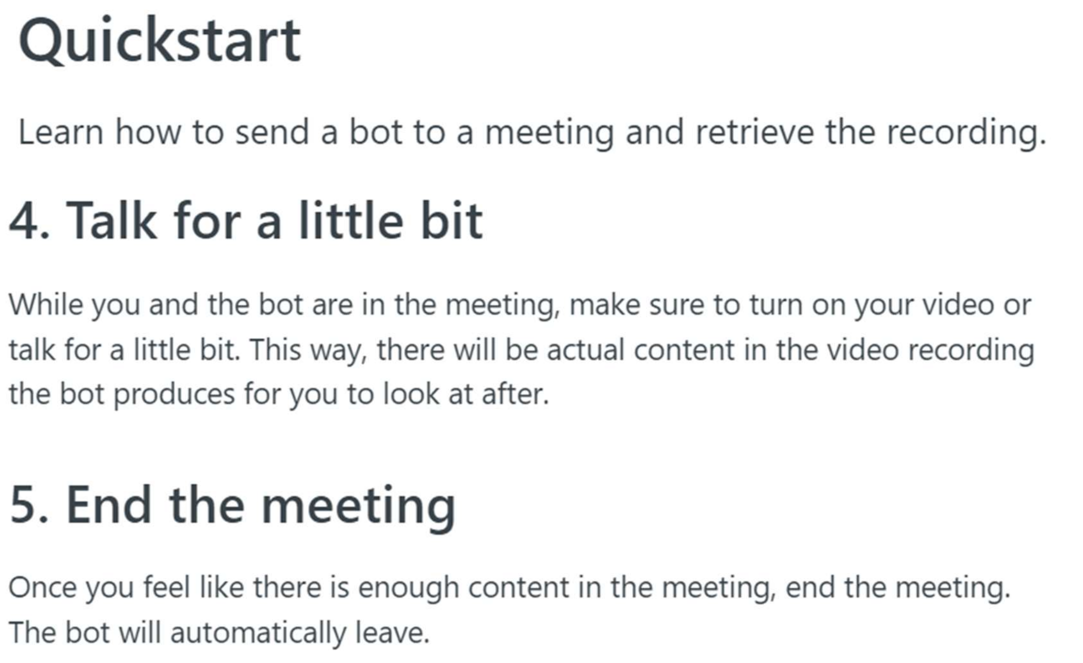
23. The method according to claim **13**, wherein the virtual participant processes are operative for recording information streams in a plurality of multimedia channels, further comprising combining the recorded information streams into a common stream.

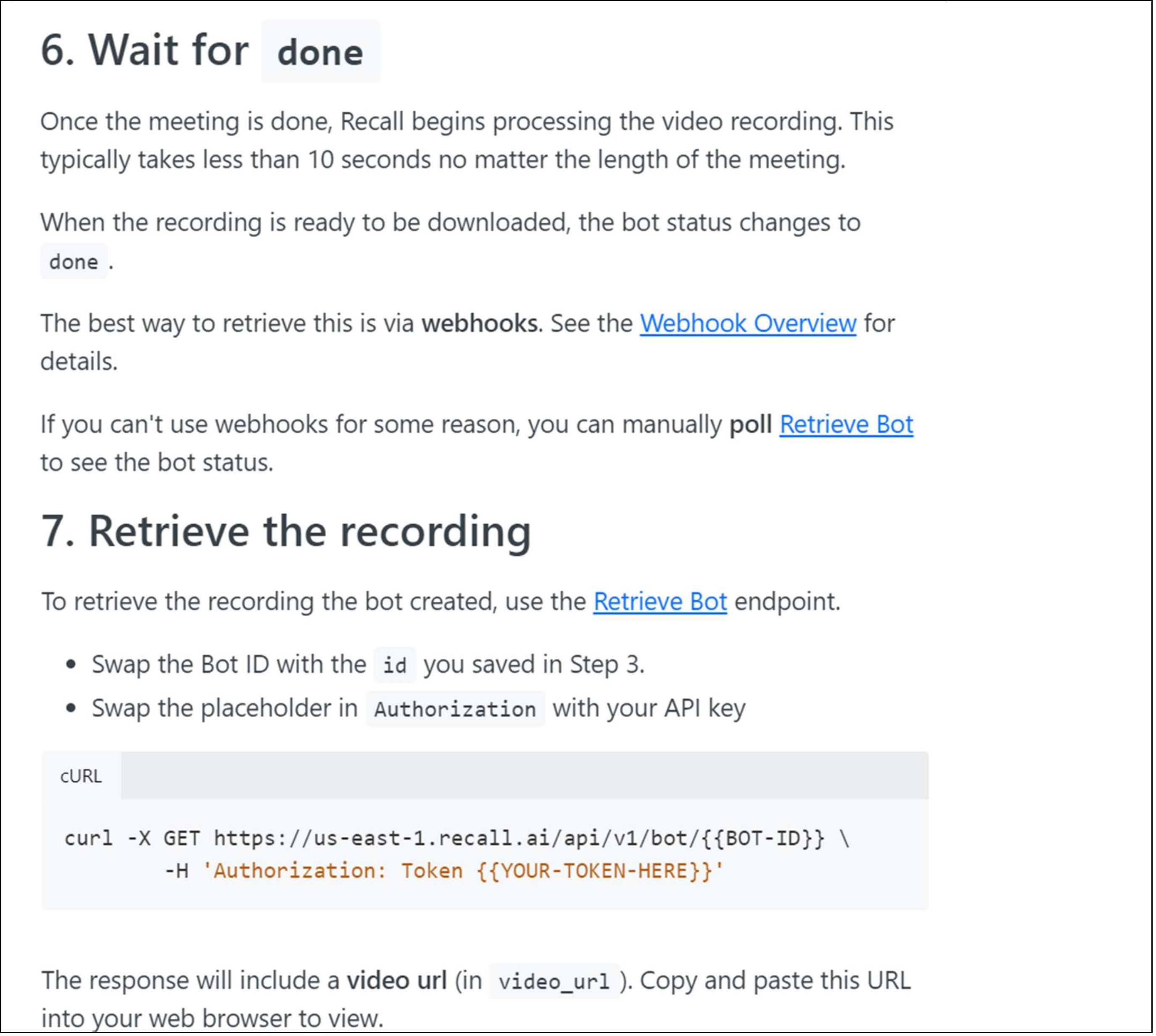
* * * * *

EXHIBIT B

U.S. Patent No. 9,699,409 – Infringement Claim Chart

The following chart demonstrates infringement of claim 1 of U.S. Patent No. 9,699,409 (“the ’409 patent”) through use of Recall.ai’s bots to record web conferences. The infringement analysis below is based on Gong’s preliminary review of publicly-available information, and Gong reserves all rights to revise it based on additional information it learns, any response by Recall.ai, or for any other reason. The identification of structures, screenshots, and steps is exemplary, and it should be understood that additional such structures, screenshots, and steps can be identified for each claim element. In addition, the choice of claim 1 of the ’409 patent in this analysis is exemplary, and Gong reserves all rights to identify further infringement by Recall.ai.

Claim Element	Infringement
1[pre] A method of conference recording, comprising the steps of	Recall.ai provides a method of conference recording. For example, Recall.ai instructs users on how “to send a bot to a meeting and retrieve the recording”:  Quickstart Learn how to send a bot to a meeting and retrieve the recording. 4. Talk for a little bit While you and the bot are in the meeting, make sure to turn on your video or talk for a little bit. This way, there will be actual content in the video recording the bot produces for you to look at after. 5. End the meeting Once you feel like there is enough content in the meeting, end the meeting. The bot will automatically leave.



6. Wait for `done`

Once the meeting is done, Recall begins processing the video recording. This typically takes less than 10 seconds no matter the length of the meeting.

When the recording is ready to be downloaded, the bot status changes to `done` .

The best way to retrieve this is via **webhooks**. See the Webhook Overview for details.

If you can't use webhooks for some reason, you can manually **poll** Retrieve Bot to see the bot status.

7. Retrieve the recording

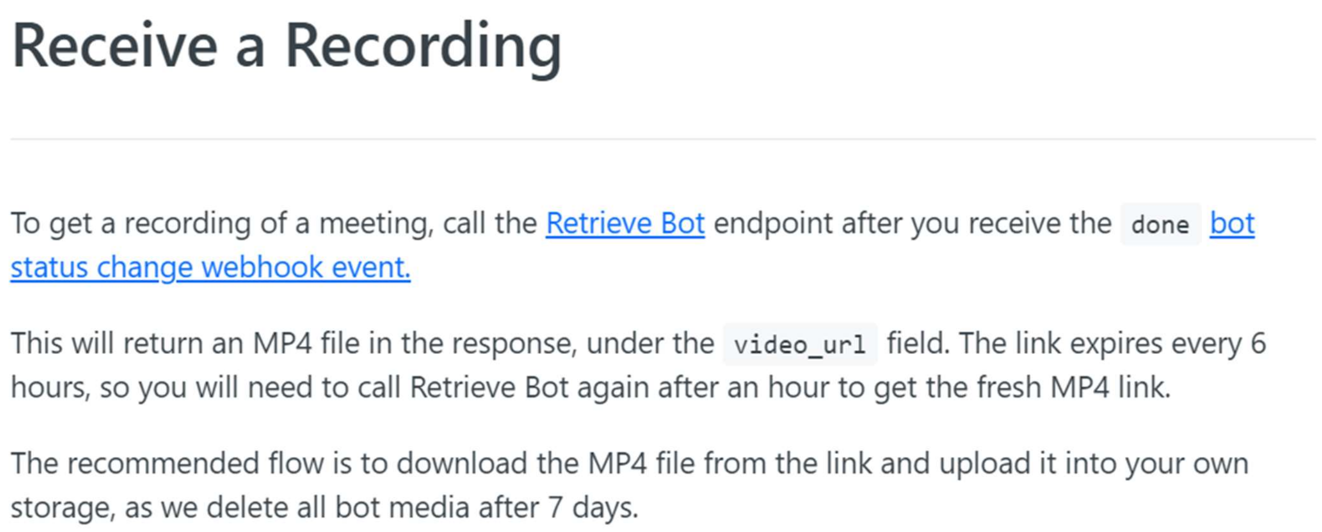
To retrieve the recording the bot created, use the Retrieve Bot endpoint.

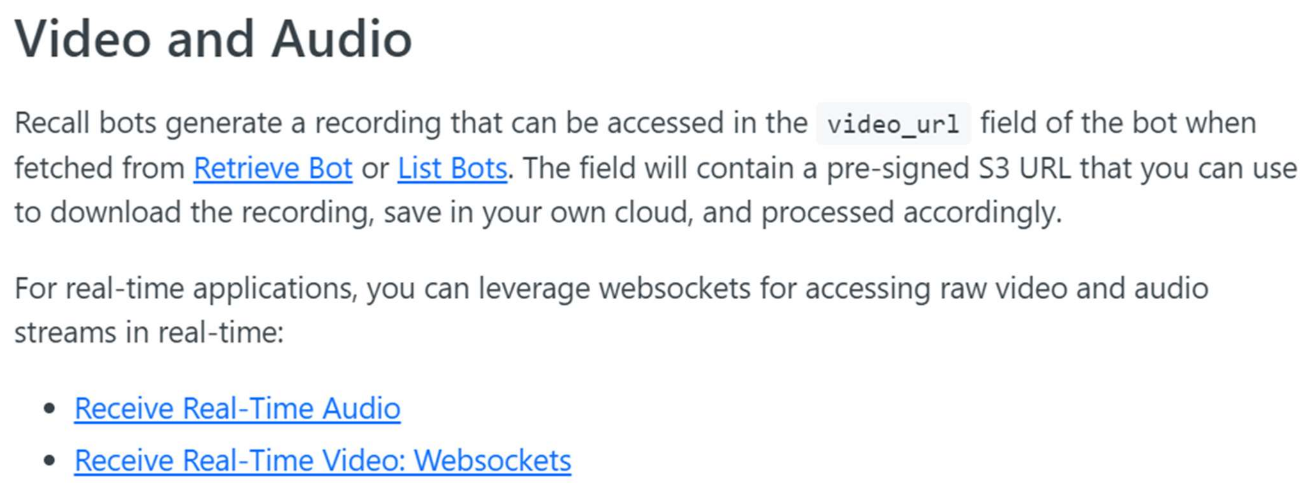
- Swap the Bot ID with the `id` you saved in Step 3.
- Swap the placeholder in `Authorization` with your API key

cURL

```
curl -X GET https://us-east-1.recall.ai/api/v1/bot/{{BOT-ID}} \
     -H 'Authorization: Token {{YOUR-TOKEN-HERE}}'
```

The response will include a **video url** (in `video_url`). Copy and paste this URL into your web browser to view.

	https://docs.recall.ai/docs/quickstart  Receive a Recording To get a recording of a meeting, call the Retrieve Bot endpoint after you receive the `done` bot status change webhook event. This will return an MP4 file in the response, under the `video_url` field. The link expires every 6 hours, so you will need to call Retrieve Bot again after an hour to get the fresh MP4 link. The recommended flow is to download the MP4 file from the link and upload it into your own storage, as we delete all bot media after 7 days. https://docs.recall.ai/docs/receive-a-recording



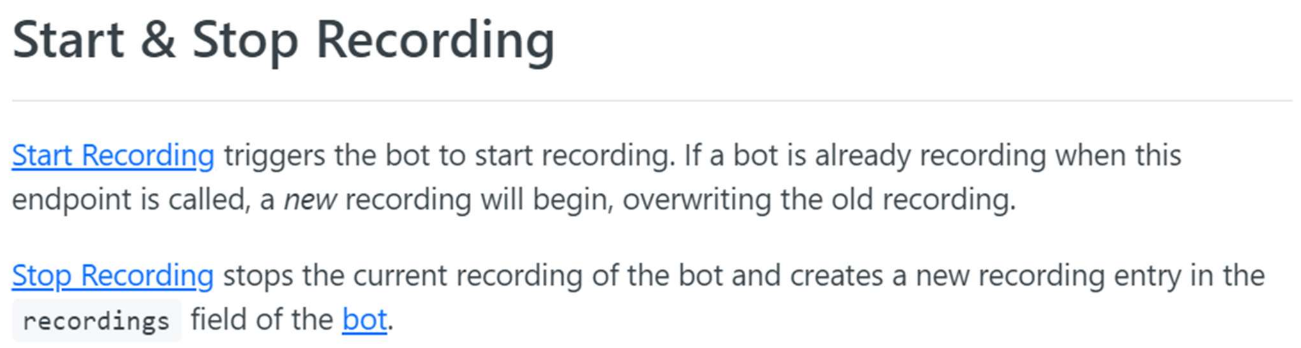
Video and Audio

Recall bots generate a recording that can be accessed in the `video_url` field of the bot when fetched from Retrieve Bot or List Bots. The field will contain a pre-signed S3 URL that you can use to download the recording, save in your own cloud, and processed accordingly.

For real-time applications, you can leverage websockets for accessing raw video and audio streams in real-time:

- Receive Real-Time Audio
- Receive Real-Time Video: Websockets

https://docs.recall.ai/docs/getting-started



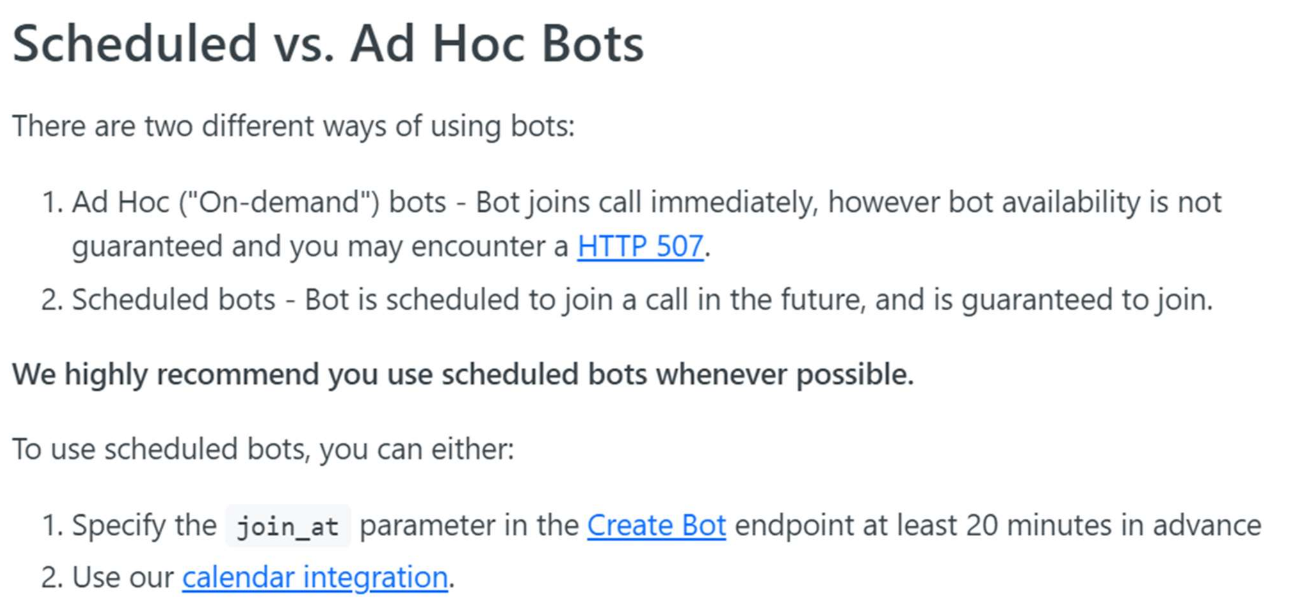
Start & Stop Recording

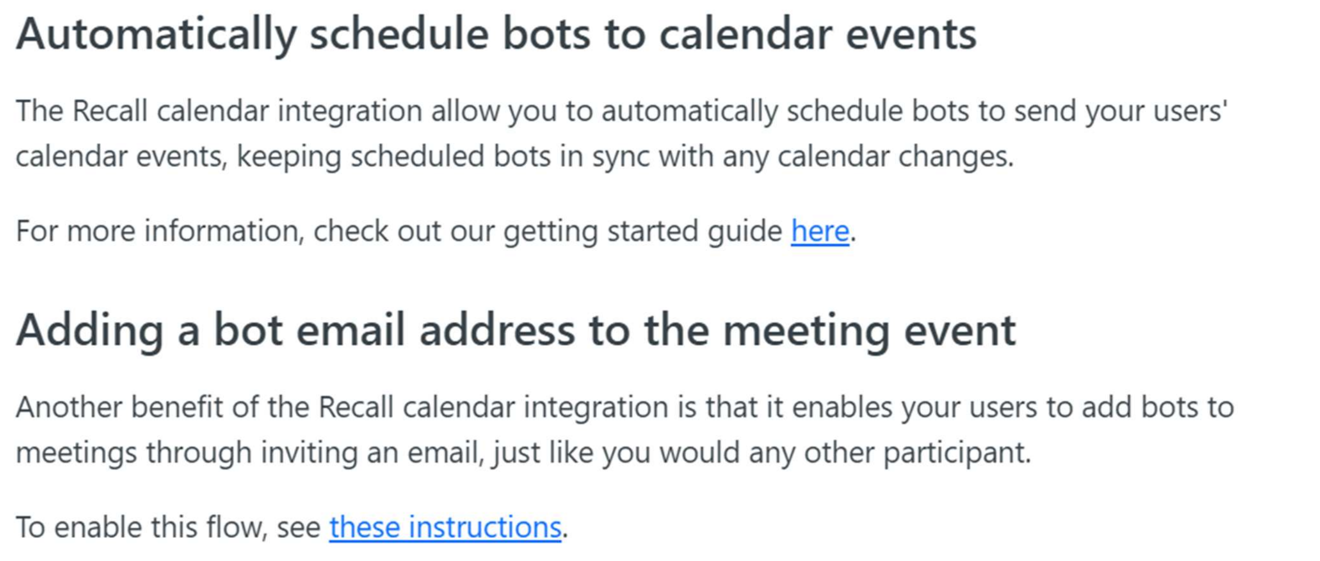
Start Recording triggers the bot to start recording. If a bot is already recording when this endpoint is called, a *new* recording will begin, overwriting the old recording.

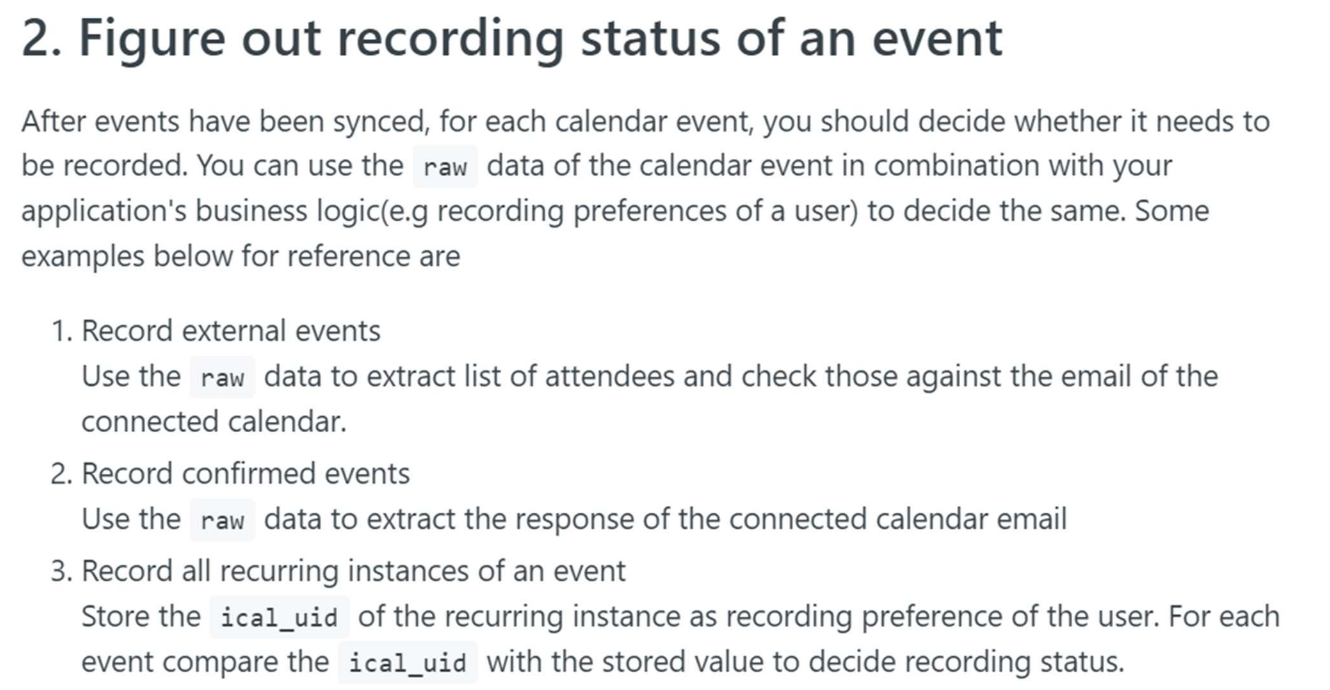
Stop Recording stops the current recording of the bot and creates a new recording entry in the `recordings` field of the bot.

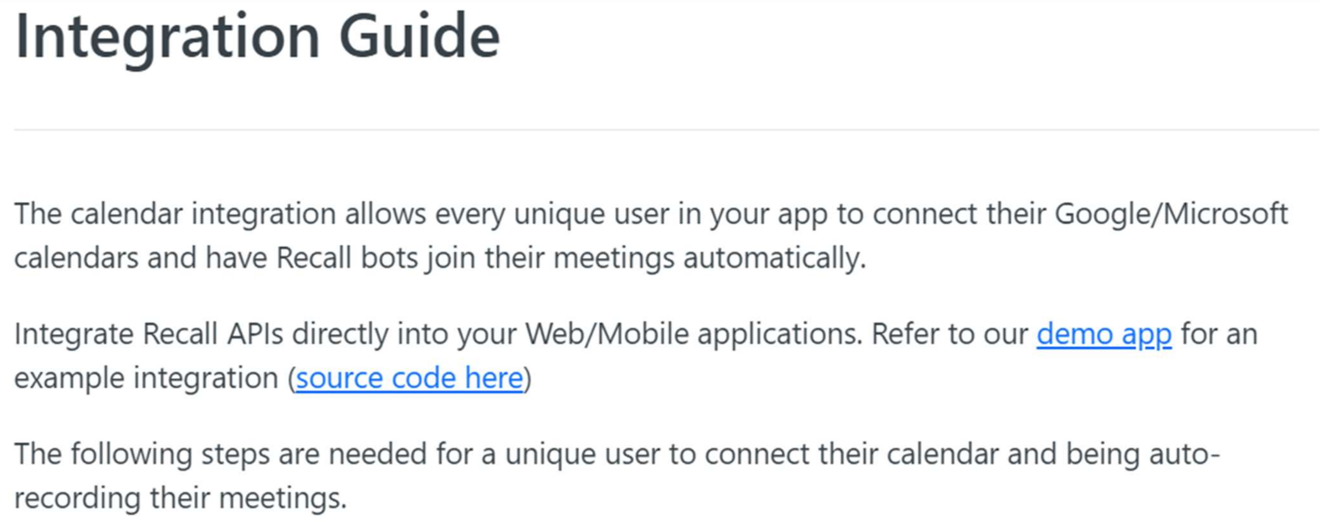
https://docs.recall.ai/docs/recording-control

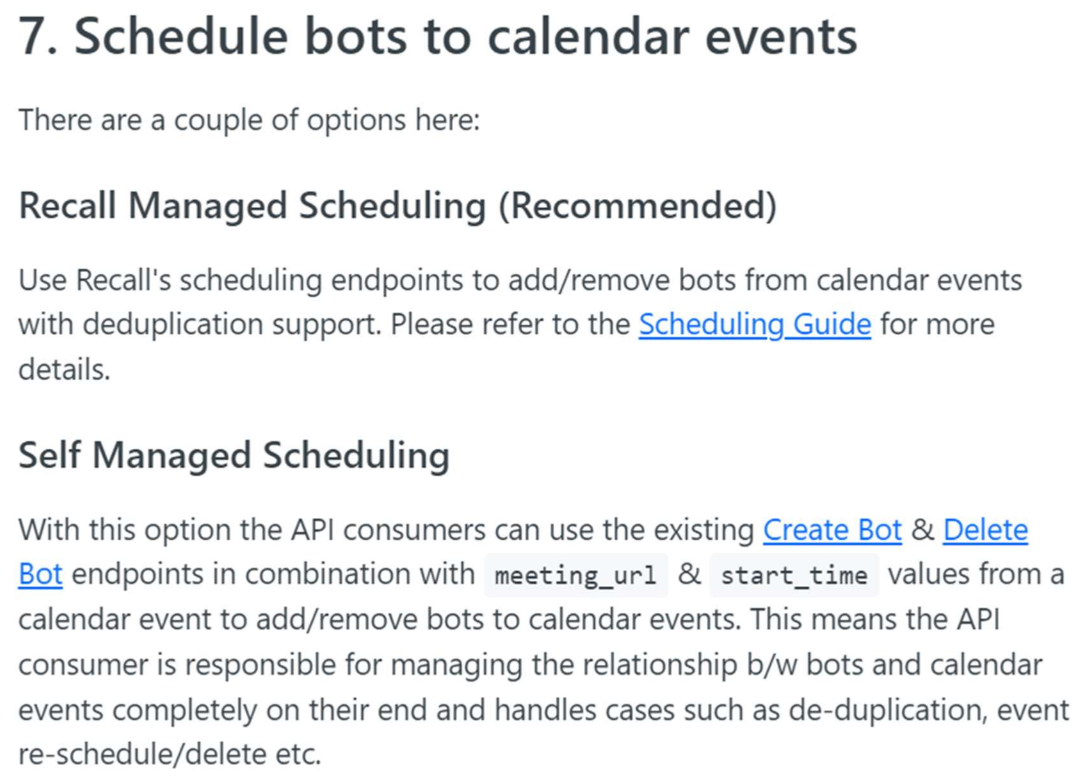
As reflected in the above instructions, Recall.ai actively induces infringement by instructing and encouraging its customers to perform the claimed method step.

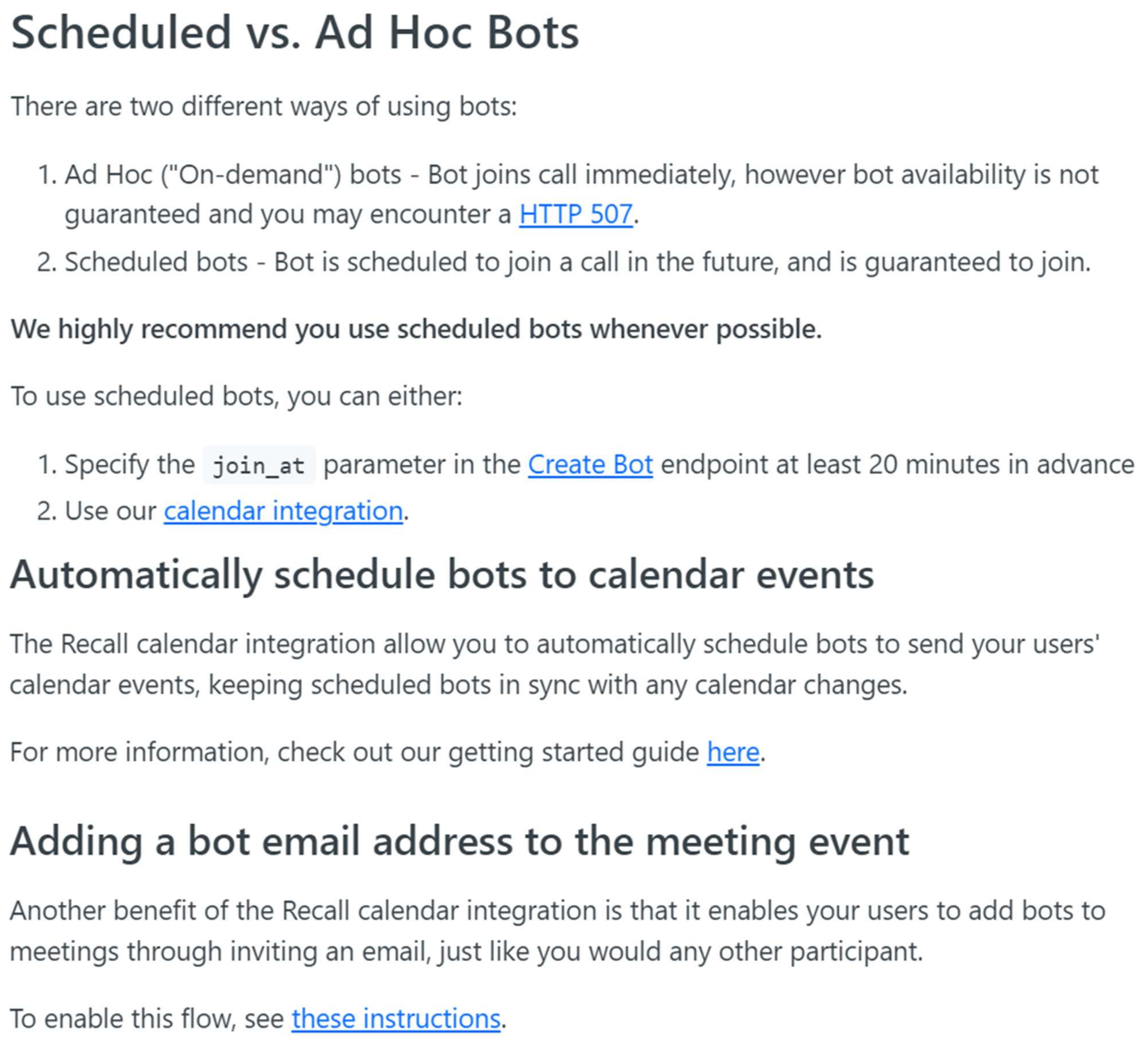
1[a] identifying a plurality of virtual conferences being operated by a conferencing system connected to a communications network, the virtual conferences having human participants;	Recall.ai provides a method of conference recording that comprises identifying a plurality of virtual conferences being operated by a conferencing system connected to a communications network, the virtual conferences having human participants. For example, Recall.ai supports scheduled bots:  **Scheduled vs. Ad Hoc Bots** There are two different ways of using bots: 1. Ad Hoc ("On-demand") bots - Bot joins call immediately, however bot availability is not guaranteed and you may encounter a HTTP 507. 2. Scheduled bots - Bot is scheduled to join a call in the future, and is guaranteed to join. **We highly recommend you use scheduled bots whenever possible.** To use scheduled bots, you can either: 1. Specify the `join_at` parameter in the Create Bot endpoint at least 20 minutes in advance 2. Use our calendar integration.

	 **Automatically schedule bots to calendar events** The Recall calendar integration allow you to automatically schedule bots to send your users' calendar events, keeping scheduled bots in sync with any calendar changes. For more information, check out our getting started guide here. **Adding a bot email address to the meeting event** Another benefit of the Recall calendar integration is that it enables your users to add bots to meetings through inviting an email, just like you would any other participant. To enable this flow, see these instructions. https://docs.recall.ai/docs/bot-fundamentals

	 2. Figure out recording status of an event After events have been synced, for each calendar event, you should decide whether it needs to be recorded. You can use the `raw` data of the calendar event in combination with your application's business logic(e.g recording preferences of a user) to decide the same. Some examples below for reference are 1. Record external events Use the `raw` data to extract list of attendees and check those against the email of the connected calendar. 2. Record confirmed events Use the `raw` data to extract the response of the connected calendar email 3. Record all recurring instances of an event Store the `ical_uid` of the recurring instance as recording preference of the user. For each event compare the `ical_uid` with the stored value to decide recording status. https://docs.recall.ai/docs/scheduling-guide

	 Integration Guide The calendar integration allows every unique user in your app to connect their Google/Microsoft calendars and have Recall bots join their meetings automatically. Integrate Recall APIs directly into your Web/Mobile applications. Refer to our demo app for an example integration (source code here) The following steps are needed for a unique user to connect their calendar and being auto-recording their meetings. https://docs.recall.ai/docs/calendar-v1-integration-guide

	 **7. Schedule bots to calendar events** There are a couple of options here: **Recall Managed Scheduling (Recommended)** Use Recall's scheduling endpoints to add/remove bots from calendar events with deduplication support. Please refer to the Scheduling Guide for more details. **Self Managed Scheduling** With this option the API consumers can use the existing Create Bot & Delete Bot endpoints in combination with `meeting_url` & `start_time` values from a calendar event to add/remove bots to calendar events. This means the API consumer is responsible for managing the relationship b/w bots and calendar events completely on their end and handles cases such as de-duplication, event re-schedule/delete etc. https://docs.recall.ai/docs/calendar-v2-integration-guide As reflected in the above instructions, Recall.ai actively induces infringement by instructing and encouraging its customers to perform the claimed method step.
1[b] executing a plurality of virtual participant processes in a processor;	Recall.ai provides a method of conference recording that comprises executing a plurality of virtual participant processes in a processor. For example, Recall.ai supports multiple bots:



Scheduled vs. Ad Hoc Bots

There are two different ways of using bots:

1. Ad Hoc ("On-demand") bots - Bot joins call immediately, however bot availability is not guaranteed and you may encounter a HTTP 507.
2. Scheduled bots - Bot is scheduled to join a call in the future, and is guaranteed to join.

We highly recommend you use scheduled bots whenever possible.

To use scheduled bots, you can either:

1. Specify the `join_at` parameter in the Create Bot endpoint at least 20 minutes in advance
2. Use our calendar integration.

Automatically schedule bots to calendar events

The Recall calendar integration allow you to automatically schedule bots to send your users' calendar events, keeping scheduled bots in sync with any calendar changes.

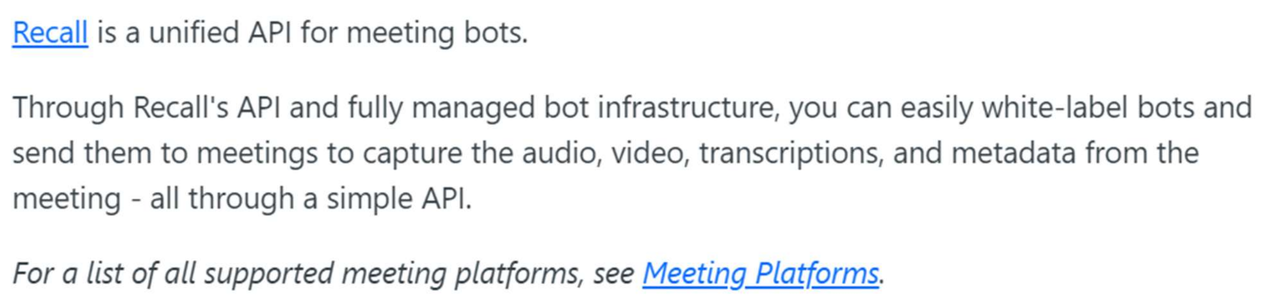
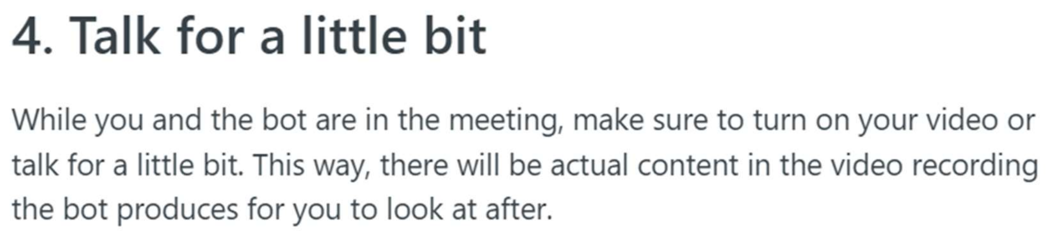
For more information, check out our getting started guide here.

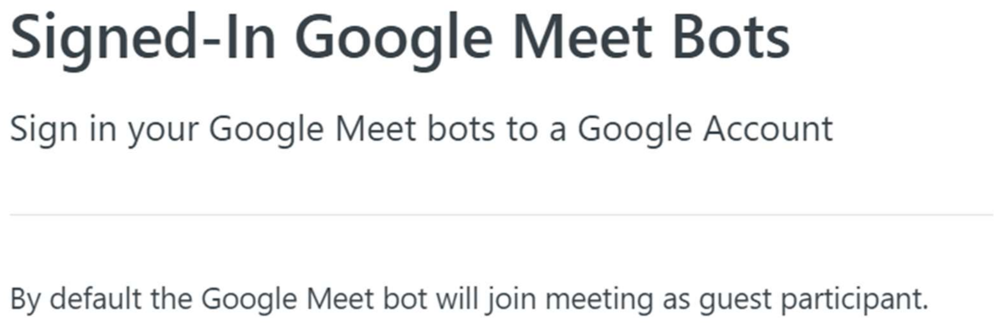
Adding a bot email address to the meeting event

Another benefit of the Recall calendar integration is that it enables your users to add bots to meetings through inviting an email, just like you would any other participant.

To enable this flow, see these instructions.

https://docs.recall.ai/docs/bot-fundamentals

	 Recall is a unified API for meeting bots. Through Recall's API and fully managed bot infrastructure, you can easily white-label bots and send them to meetings to capture the audio, video, transcriptions, and metadata from the meeting - all through a simple API. *For a list of all supported meeting platforms, see Meeting Platforms.* https://docs.recall.ai/docs/getting-started As reflected in the above instructions, Recall.ai actively induces infringement by instructing and encouraging its customers to perform the claimed method step.
1[c] registering the virtual participant processes with the conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface; and;	Recall.ai provides a method of conference recording that comprises registering the virtual participant processes with the conferencing system as co-participants in the virtual conferences by emulating human interactions with a graphical user interface. For example, Recall.ai supports bots joining web conferences:  **4. Talk for a little bit** While you and the bot are in the meeting, make sure to turn on your video or talk for a little bit. This way, there will be actual content in the video recording the bot produces for you to look at after. https://docs.recall.ai/docs/quickstart

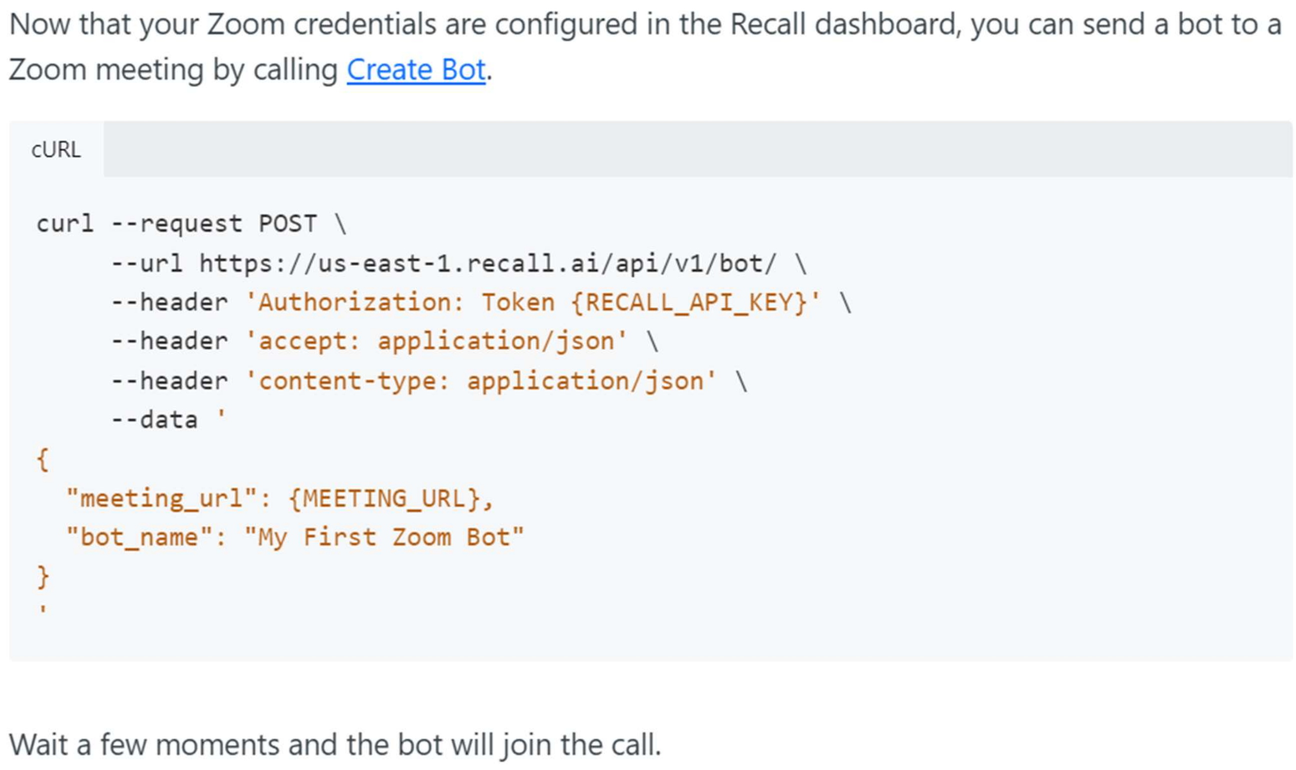


Signed-In Google Meet Bots

Sign in your Google Meet bots to a Google Account

By default the Google Meet bot will join meeting as guest participant.

https://docs.recall.ai/docs/google-meet-login-getting-started

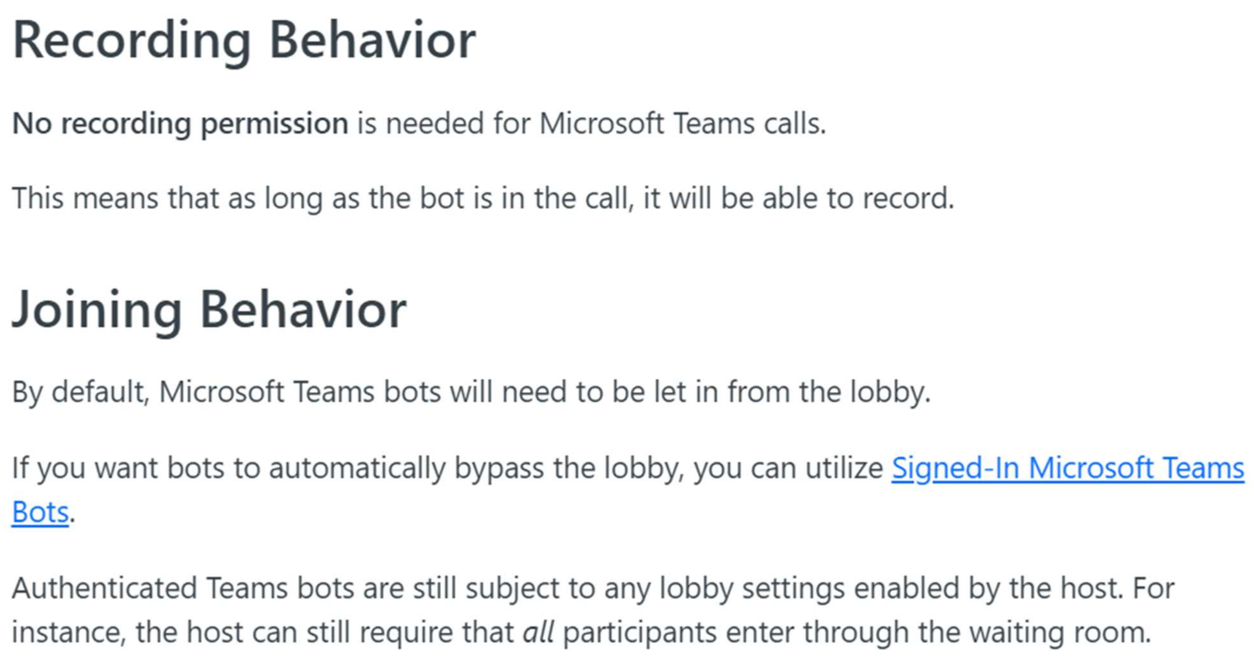


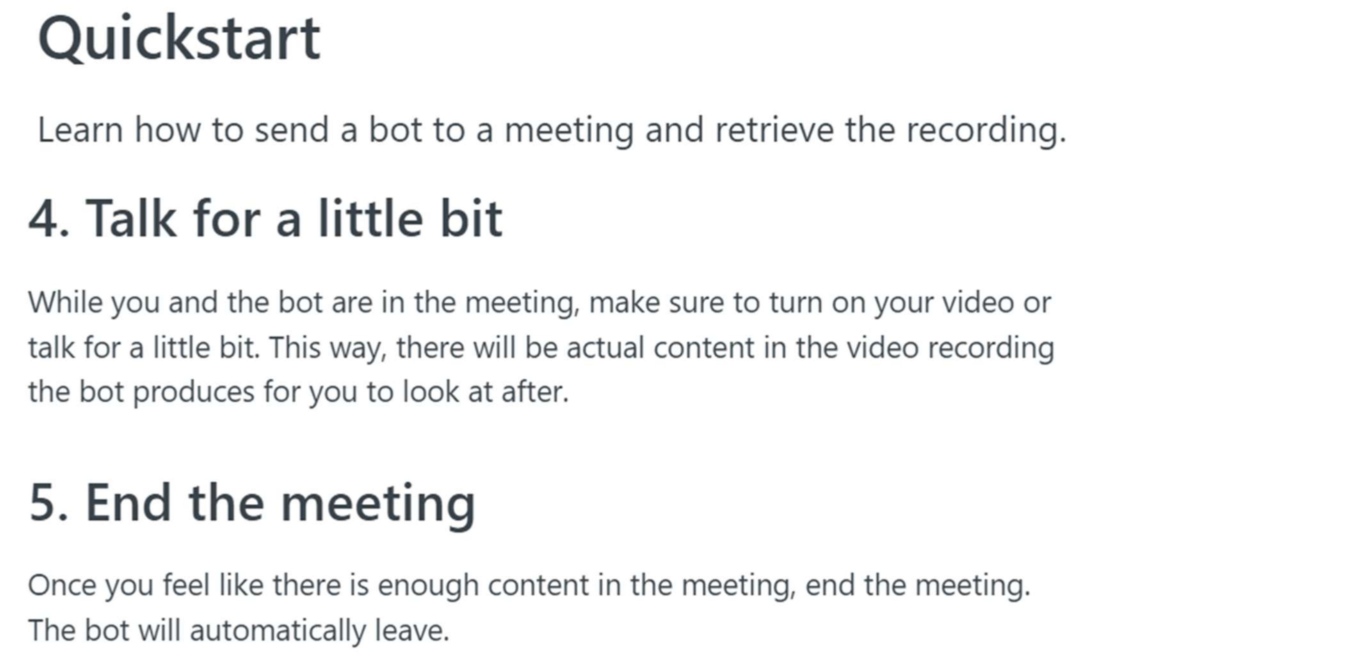
Now that your Zoom credentials are configured in the Recall dashboard, you can send a bot to a Zoom meeting by calling Create Bot.

cURL

```
curl --request POST \
     --url https://us-east-1.recall.ai/api/v1/bot/ \
     --header 'Authorization: Token {RECALL_API_KEY}' \
     --header 'accept: application/json' \
     --header 'content-type: application/json' \
     --data '
{
  "meeting_url": {MEETING_URL},
  "bot_name": "My First Zoom Bot"
}
'
```

Wait a few moments and the bot will join the call.

	https://docs.recall.ai/docs/set-up-zoom  Recording Behavior **No recording permission** is needed for Microsoft Teams calls. This means that as long as the bot is in the call, it will be able to record. Joining Behavior By default, Microsoft Teams bots will need to be let in from the lobby. If you want bots to automatically bypass the lobby, you can utilize Signed-In Microsoft Teams Bots. Authenticated Teams bots are still subject to any lobby settings enabled by the host. For instance, the host can still require that *all* participants enter through the waiting room. https://docs.recall.ai/docs/microsoft-teams As reflected in the above instructions, Recall.ai actively induces infringement by instructing and encouraging its customers to perform the claimed method step.
1[d] recording information streams of the human participants using the virtual participant processes.	Recall.ai provides a method of conference recording that comprises recording information streams of the human participants using the virtual participant processes. For example, Recall.ai supports bots recording web conferences:



Quickstart

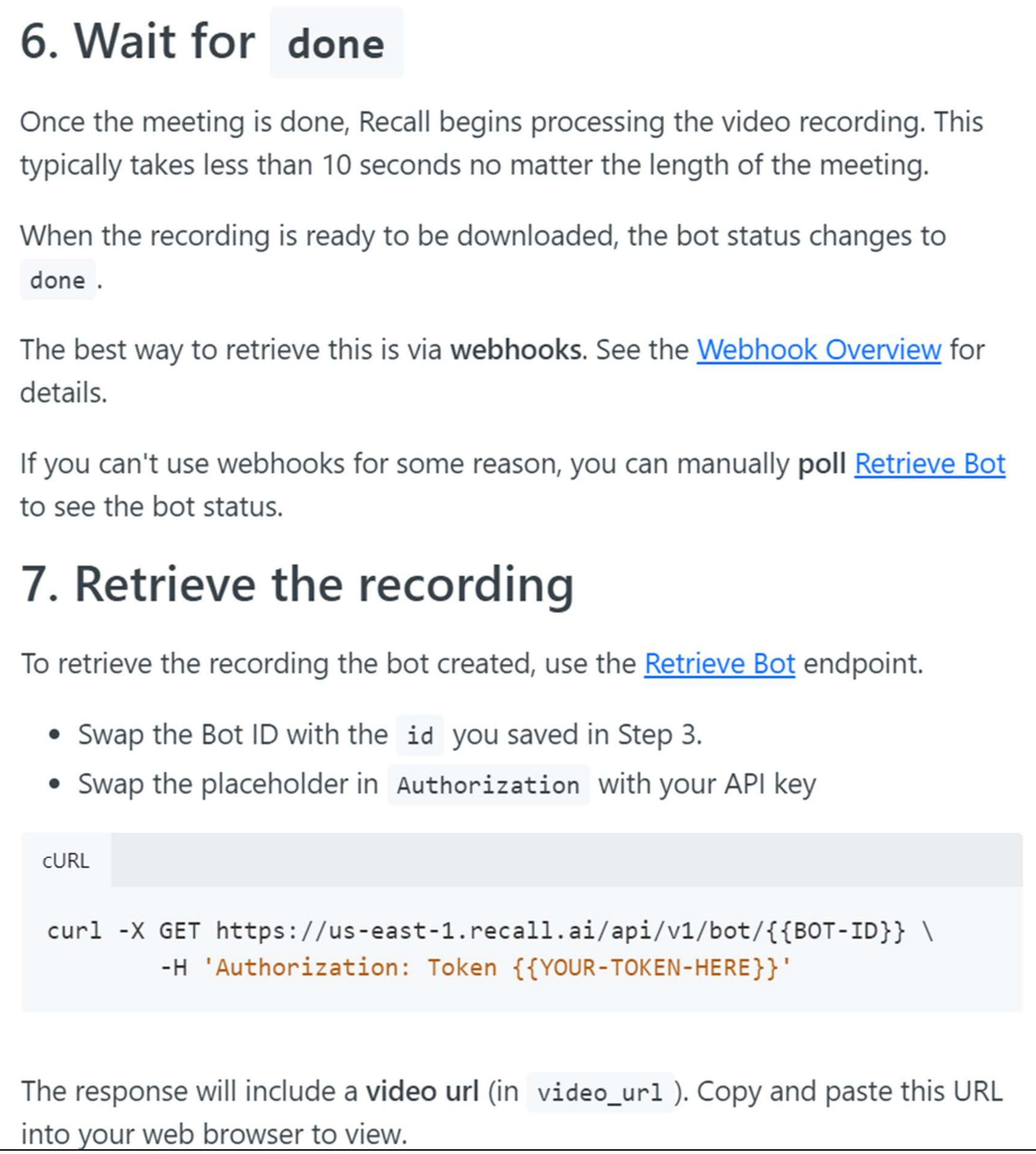
Learn how to send a bot to a meeting and retrieve the recording.

4. Talk for a little bit

While you and the bot are in the meeting, make sure to turn on your video or talk for a little bit. This way, there will be actual content in the video recording the bot produces for you to look at after.

5. End the meeting

Once you feel like there is enough content in the meeting, end the meeting. The bot will automatically leave.



6. Wait for `done`

Once the meeting is done, Recall begins processing the video recording. This typically takes less than 10 seconds no matter the length of the meeting.

When the recording is ready to be downloaded, the bot status changes to `done` .

The best way to retrieve this is via **webhooks**. See the Webhook Overview for details.

If you can't use webhooks for some reason, you can manually **poll** Retrieve Bot to see the bot status.

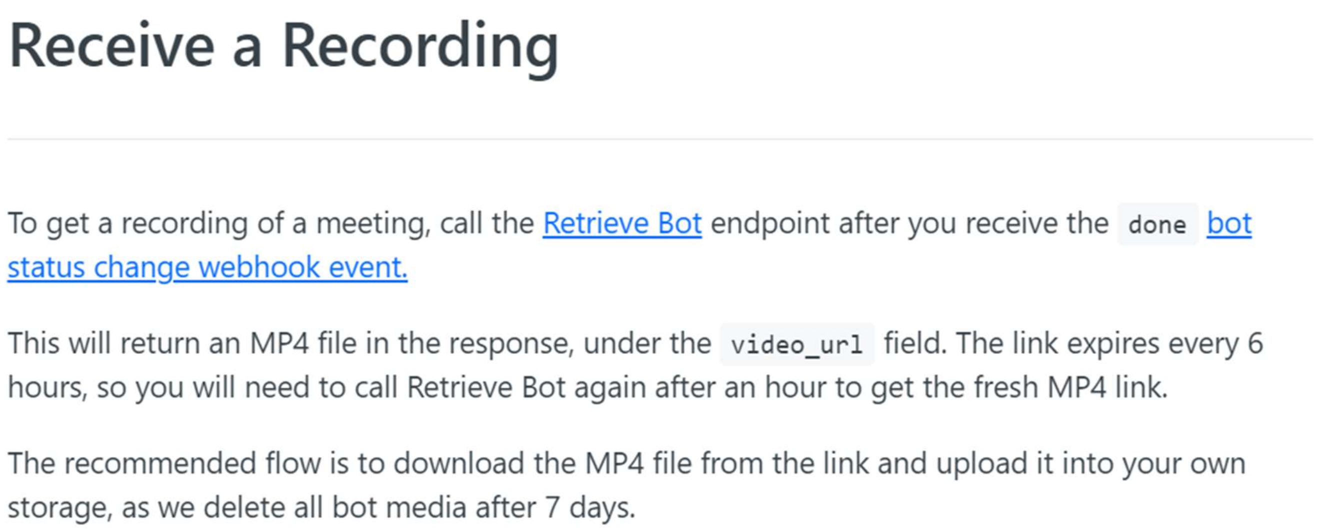
7. Retrieve the recording

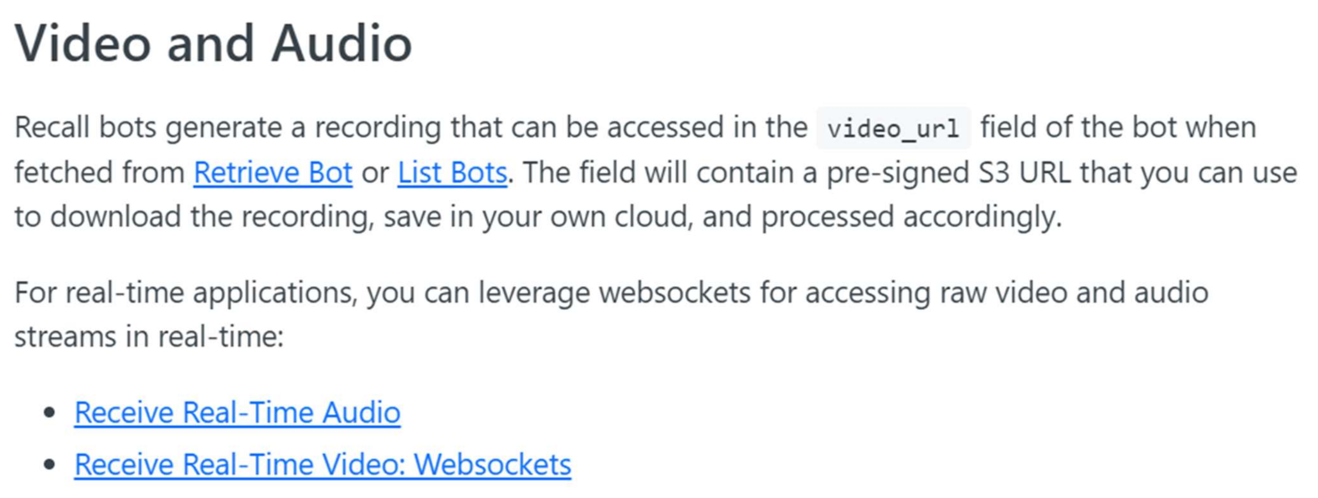
To retrieve the recording the bot created, use the Retrieve Bot endpoint.

- Swap the Bot ID with the `id` you saved in Step 3.
- Swap the placeholder in `Authorization` with your API key

```
curl -X GET https://us-east-1.recall.ai/api/v1/bot/{{BOT-ID}} \
        -H 'Authorization: Token {{YOUR-TOKEN-HERE}}'
```

The response will include a **video url** (in `video_url`). Copy and paste this URL into your web browser to view.

	https://docs.recall.ai/docs/quickstart  **Receive a Recording** To get a recording of a meeting, call the Retrieve Bot endpoint after you receive the `done` bot status change webhook event. This will return an MP4 file in the response, under the `video_url` field. The link expires every 6 hours, so you will need to call Retrieve Bot again after an hour to get the fresh MP4 link. The recommended flow is to download the MP4 file from the link and upload it into your own storage, as we delete all bot media after 7 days. https://docs.recall.ai/docs/receive-a-recording



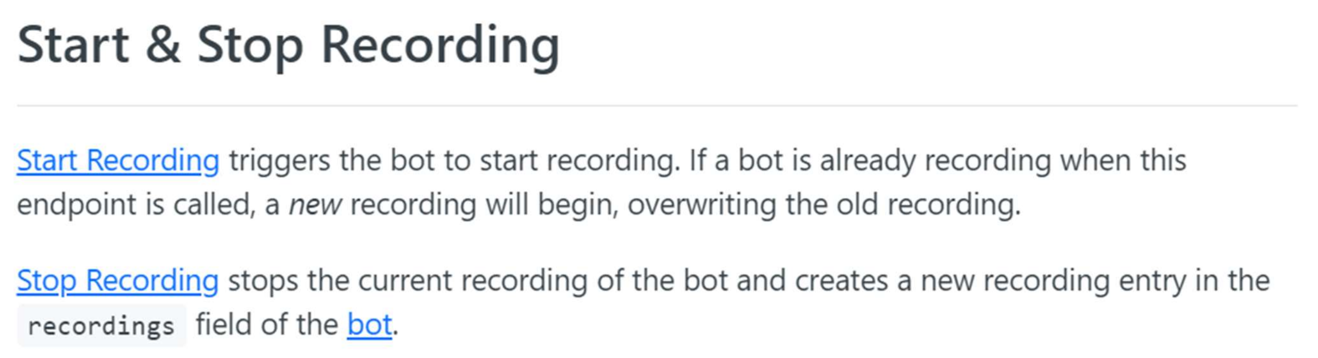
Video and Audio

Recall bots generate a recording that can be accessed in the `video_url` field of the bot when fetched from Retrieve Bot or List Bots. The field will contain a pre-signed S3 URL that you can use to download the recording, save in your own cloud, and processed accordingly.

For real-time applications, you can leverage websockets for accessing raw video and audio streams in real-time:

- Receive Real-Time Audio
- Receive Real-Time Video: Websockets

https://docs.recall.ai/docs/getting-started



Start & Stop Recording

Start Recording triggers the bot to start recording. If a bot is already recording when this endpoint is called, a *new* recording will begin, overwriting the old recording.

Stop Recording stops the current recording of the bot and creates a new recording entry in the `recordings` field of the bot.

https://docs.recall.ai/docs/recording-control

As reflected in the above instructions, Recall.ai actively induces infringement by instructing and encouraging its customers to perform the claimed method step.